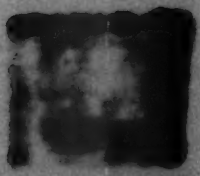
LITHOGRAPHIC ABSTRACTS
1950

Monthly Lithographic Abstracts
September 1949 through July 1950

LITHOGRAPHIC TECHNICAL FOUNDATION, INC.

Z
252.5
05
L5
no.650



LITHOGRAPHIC ABSTRACTS
1950

Monthly Lithographic Abstracts
September 1949 through July 1950

LITHOGRAPHIC TECHNICAL FOUNDATION, INC.
131 East 39th Street, New York 16, N. Y.

Copyright 1950 by
Lithographic Technical Foundation, Inc.
New York 16, N. Y.

The Foundation has sponsored more than 100 publications devoted to the Lithographic Industry. For a complete list of Foundation Texts, Research Bulletins, and Shop Manuals, write to

LITHOGRAPHIC TECHNICAL FOUNDATION, INC.
131 East 39th Street New York 16, N. Y.

LITHOGRAPHIC ABSTRACTS

1950

Lithographic Abstracts *are published monthly in the trade press. Because of the exigencies of magazine publication, a complete set of abstracts cannot be had from one source. For this reason, and for the convenience of the lithographic industry, annual publication commenced with the 1947 issue. The months September 1949 through July 1950 are included in this issue. Plans are underway to publish Lithographic Abstracts, prior to 1947.*

Abstracts of important current articles, patents, and books, are compiled by the Research Department of the Lithographic Technical Foundation, Inc. These abstracts represent statements made by the authors of articles abstracted and do not express the opinions of the abstractors or of the Research Department. Mimeographed lists have been prepared of (1) Periodicals Abstracted by the Department of Lithographic Research, and (2) Books of Interest to Lithographers. Either list may be obtained for ten cents in coin or U. S. stamps. Address the Lithographic Technical Foundation, Inc., Research Dept., Glessner House, 1800 S. Prairie Ave., Chicago 16, Ill.

*HOW TO OBTAIN COPIES

Where titles are marked with an asterisk the original articles can be furnished by the Foundation (address above) as photographic copies at sixty cents per page, plus six cents postage for each four pages or PB reports can be secured from the Dept. of Commerce, Office of Technical Service, Washington, D. C., for prices quoted. Check or money order should be made payable to "Treasurer of the United States."

191539

Process photography—general

* REDUCTION. Charles W. Gamble. *Process Engraver's Monthly* 56, No. 666, June, 1949, p. 174. The uses of reducing solutions on photographic negatives are discussed. Particular attention is given to the "shadow" or "cutting" reducers used on halftone transparencies.

* PROCESS PRACTICE: LIGHT DISTRIBUTION. Frank H. Smith. *Process Engraver's Monthly* 56, No. 666, June, 1949, p. 178. The photo-electric scanning device of White, Osborne, and Reich (British Patent 606, 130 and 606, 133) which utilizes photo-electric cells scanning a color transparency to control electronic pens applying dye solutions to paper is discussed. The cells are connected to amplifiers which control the electric - static potential between the pens and paper, the potential regulates the spray of dye solutions from the pens.

USE OF WETTING AGENTS IN PHOTOGRAPHY. Le Photographe, pp. 329-30, No. 682, Oct. 20, 1948. The use of wetting agents for the following purposes is described: (a) in the developer, (b) after washing to prevent drying marks, (c) as addends to dye solutions for retouching purposes, (d) for eliminating "oyster-shell" markings in ferrotyping, and (e) for preventing uneven results when intensifying and reducing. Abstractor's Note: The author fails to point out that not all wetting agents are suitable for these purposes; some wetting agents restrain development while others are readily precipitated by traces of an alum fixing bath. It is also mentioned that "the American Press recommends the addition of wetting agents to fixing baths and even to the wash water," but no specific reference is given.

The use of wetting agents in fixing baths is questionable, even in the absence of precipitation, but the practice of dripping a concentrated solution of a wetting agent into the washing tank has proved satisfactory in some cases and this eliminates the necessity of a subsequent rinse, and possible difficulties due to sludge accumulation in the tank of wetting agent. Monthly Abstract Bulletin 35, No. 6, June, 1949, p. 250.

* FLEXICHROME. Frank Preucil. *National Lithographer* 56, No. 9, September, 1949, p. 28. In this article the Larjachrome and Flexichrome processes are described. Larjachrome is a technique for converting color transparences into color prints. The anti-Halation backing is scraped off and the transparency applied emulsion down to a temporary paper base. The original acetate base is then dissolved off and the emulsion transferred to an "expansion compound" at 160° F, where it swells to almost twice its linear dimensions. It can then be applied to its permanent white paper support. The author considers this the easiest and most accurate method for reproducing a transparency as a print. The Flexichrome process is an improved version of the Crawford Flexichrome technique for hand coloring black and white images. A black and white positive is shot onto stripping film and developed, tanned and etched to produce a relief image. The silver is bleached and the relief stripped to a support of dye transfer paper. Dyes can then be brushed on, and the color will faithfully and automatically follow the tone gradations of the print.

* MULTIPLE FILTERS AND COLORED LIGHTS. Frank Preucil. *National Lithographer* 56, No. 12, December, 1949, Pages 44-45 and 107 (3 pages). John Yule described in patents a method for avoiding a common error of masking due to the masks overlightening two color mixtures. By Yule's method a short extra exposure is added to a separation using the same filter that will be used for the negative from which

the mask will be made. Arthur Hardy proposed composite and mixed section filters to obtain the effects of negative sensitivities. Double exposure to separate negatives and positives or to the original distinguishes his process from the usual superimposed masking technique. The use of colored light sources to make filters unnecessary in the lens has received renewed attention, particularly by Andrew Balika and William Stone of Copifier Litho Corp. and R. E. Farnham of General Electric Co. They use gelatin filters on fluorescent tubes. Robert F. Reed of LTF has suggested that the use of such colored exposure light could improve the reproduction of sketches whose dyes or pigments had some degree of fluorescence when exposed to the strong Ultra violet of arc lights. Adrian Klein described a method which used a constant dispersion prism to spread the light from an arc source into a spectrum. New types of vapor lamps have also been suggested for color separation exposure.

* CHANGING SCREEN ANGLES TO AVOID THE UNDESIRED SCREEN PATTERN OR MOIRE. ALSO FOR MAKING SPECIAL EXPOSURES OF ANY PART OF THE COPY, IN ANY COLOR, AND COMBINING INTO ONE FINAL NEGATIVE. Alex J. Bart. *Photo-Engraver's Bulletin* 39, No. 4, November, 1949, Pages 43-44 (2 pages). A technique for combining special exposures of certain copy areas into one final negative. Examples of special exposures are screen angle changes, or changes in filter or exposure time to get fuller color correction. By using colored masks on the copy together with proper filters, line shots can be made which carry the areas for special treatment. Halftone negatives are also made by the normal and special procedures. A contact positive is made from each halftone negative onto high contrast film which has been previously exposed to the proper line negative and partially developed. In this way those portions of the copy which had no density on the line negative will be blacked out. The halftone positives can then be double printed onto the final, composite negative.

* AN IMPROVED PHOTOMULTIPLIER TUBE COLOR DENSITOMETER. Monroe Sweet. *Journal of the Society of Motion Picture and Television Engineers*. 54, Number 1, January 1950, Pages 35-62 (28 pages). Previously, attempts were made to modify black and white densitometers to make them suitable for color measurements, but considerable difficulty was experienced with such modifications. Therefore, the Ansco Laboratories developed new electronic circuits utilizing the full capabilities of the photomultiplier tube for this purpose. These developments, combined with other refinements have made it possible to design a densitometer capable of using sharp-cutting filters to measure color densities up to 4.0 and over.

CHEMICAL ERASING OF PHOTOGRAPHIC SILVER IMAGES. John F. Kienast. *Official Gazette* 630, Number 3, January 17, 1950, Page 743. *United States Patent Number 2,494,765*. The process for erasing silver images on bases which comprises applying to that portion of the image which is to be erased a solution containing between 3 and 50% of cupric chloride and from 25 to 5% of ammonium chloride, treating the area to which the cupric chloride solution was applied with a substantially saturated solution of thiorurea and removing the resulting solution.

* MAKING HARD-DOT NEGATIVES. Charles F. King. *Inland Printer* 124, No. 6, March, 1950, Pages 47-49 (3 pages). To reduce dot fringe on offset plates hard dot negatives are used. Two methods of producing such negatives are described by Mr. King. Instead of stripping in the half-tone negative with the line work in

the flat, a paste-up is made of a half-tone glossy print together with the line work. This is shot in the camera as a straight line shot thus producing a hard dot negative. The second method is a variation of this technique which utilizes the Kodak Magenta Contact Screen to make the half-tone glossy print. The continuous tone negative is placed in an enlarger and is projected thru the screen on to a high contrast photographic paper. The procedure from here on is the same as described above. These methods of making hard dot negatives are especially advantageous to firms printing house organs, school annuals, etc., because it reduces camera and stripping time. The author claims that dot formation on plates made from these hard dot negatives are comparable to the dot formation in letterpress. He goes on to describe the effect of plate coating, plate preparation, graining, etc. on the quality of dots on offset plates.

* BETTER BLACK PRINTERS. Frank Preucil. *National Lithographer* 57, No. 4, April, 1950, Pages 30-31 (2 pages). The first step toward a good black printer is a separation negative with the best tone reproduction. Lens flare harms a black separation by increasing the saturation of the colors relative to the blacks. A description of a flare test is given which discovered effective density ranges of 95% for coated and 90% for uncoated lenses. The presence of a filter pulled these figures to 81% and 70%, respectively. The new Kodak Ektar lens is cited as being exceptionally good in this respect. But most lenses will give better shadow contrast and separation from pure color if the black separation is made without a filter.

* MASK DEFICIENCY AREA NO. 3. Henry R. Long. *National Lithographer* 57, No. 4, April, 1950, Pages 34-35 and 80-81 (4 pages). Available process inks do not approach theoretical color requirements, therefore mixtures of three inks contain more black than they should (are degraded). An example is given where the necessary correction is accomplished by partial removal of the two lesser important colors. In the interests of press operation undercolor removal should go beyond this correction for saturation, and should allow the black plate to carry depth and drawing. In general, a black mask should be made from a proper combination of negatives and positives to eliminate black from the pure colors. The masked black should then be exposed onto the masks for the yellow, cyan and magenta to give accurate undercolor correction.

* COLOR TEMPERATURE: ITS USE IN COLOR PHOTOGRAPHY. O. E. Miller. *Journal of the Society of Motion Picture Engineers* 54, No. 4, April, 1950, Pages 435-44 (10 pages). Color temperature as a specification for light sources is inadequate to define any light source for color photography which departs appreciably in energy distribution from the black body. It should probably be restricted to use with tungsten incandescent lamps only. Meters devised to measure color temperature by means of measurements of the relative energy in two wave length bands are likewise not trustworthy when applied to any but the black-body sources. A "three-point", rather than a "two-point", meter is needed for the precise control of photographic exposures. Such a meter should have sensitivity distributions that match those of the three emulsion layers of the color film.

* THE FLEXICHROME PROCESS. *American Photography* 44, No. 5, May, 1950, Pages 46 & 48 (2 pages). Flexichrome—a Kodak process for making color prints from black and white transparencies. The transparency is contacted or enlarged onto the Flexichrome Stripping Film, which is developed and bleached to a positive re-

lief image. The image is dyed and stripped onto a permanent backing. When dry it can be colored with the Flexichrome dyes, which are taken up by the print in proportion to the amount of gelatin present. In this way dye can be applied in broad brush strokes but will automatically appear in the proper tone gradations when the excess is blotted off. A dye application replaces any dye previously in the area.

* TYPE REPRODUCTION PROOFS. *Canadian Printer and Publisher* 59, No. 3, March, 1950, Pages 42 & 52 (2 pages). A brief, non-technical article giving the requisites of type proofs suitable for photo-lithographic reproduction. The subject is discussed under the following topics: type, presses, rollers, stock, ink and the proofer.

* HOW TO PROVE COLOR JOBS PHOTOGRAPHICALLY. Franklin R. Payer. *Modern Lithography* 18, No. 4, April, 1950, Pages 37 & 105 (2 pages). The method and procedure for proving color jobs by means of a dye-transfer process. The process yields a color print which can be used as a proof for

* TIPS ON CAMERA. Harry Shaw. *National Lithographer* 57, No. 6, June 1950, Page 44. A method of producing halftone tints is to photograph a step wedge or wedges until you obtain steps which range from 10 to 90 per cent of tone. Then make large tints on glass negatives which will be masters in the production of future tints by contact. Glass negatives are used because they are easier to contact in a printing frame. To make good tints you must work clean.

Photographic materials

* MOUNTING OF SENSITIZED PHOTOGRAPHIC PAPER ON GLASS OR TINNED METAL FOR NON-STRETCH POSITIVES. Alex J. Bart. *Photo-Engravers Bulletin* 39, No. 6. January, 1950, Pages 39-40 (2 pages). Dimensional stability of photographic paper can be obtained by mounting the dry paper on glass or metal, using bookbinder's flexible glue. Thirty gauge tinned metal is recommended, and it should be prepared by a light scouring with pumice stone. The glue is applied, allowed to set until it becomes tacky, and the paper is rolled on. The mounts will stand photographic processing, but will release the paper with hot water soaking.

* RAPID DRYING OF PHOTOGRAPHIC MATERIAL. I. Davies and A. K. Soper. *British Journal of Photography* 97, No. 4697, May 26, 1950, Page 268. A mixture containing 25% diacetone alcohol in petroleum ether is used as a bath for processed photographic material. This enables the material to be dried in an extremely short time, usually 1 minute. Water is removed from the mixture by siphoning or other acceptable mechanical method.

Light sources

* NEW PROJECTION LAMP AND CARBON FEED MECHANISM. J. K. Elderkin. *Journal of the Society of Motion Picture and Television Engineers* 54, Number 1, January, 1950, Pages 87-94 (8 pages). This paper describes a new carbon arc projection lamp employing an electronic system to provide automatic control of the carbon positions. Each carbon feed mechanism is separately driven by an alternating current motor actuated by an electronic impulse generator. Feeding speed of the carbons is controlled by varying the resistances through the generator control circuits to adjust the number of impulses supplied per minute to the alternating current motors according to the carbon consumption rates. A polarized directional electro-magnet controls the position and shape of the tail flame.

* HIGH-INTENSITY ARC LIGHT. *Printing Equipment Engineer* 79, No. 5, February, 1950, Page 34 (1 page). Announcement was made recently by the Western Union Telegraph Co. of a high-power, high intensity arc light with a luminescent source 2/10 of an in. in diam. and claimed to be ⅛ as bright as the sun. It has been announced that the light, known as Telcoarc, will result in important applications in the photo-mechanical processes in the Graphic Arts Industry. The light source, which operates in the open air, is a pool of molten zirconium metal which is maintained at a temperature near 6500 deg. F. Sponsor states the light source is extremely stable in operation, producing a uniformly bright, sharply defined circular spot of white light.

* SUPER - BRILLIANT LIGHT SOURCE. *Review of Scientific Instruments* 21, No. 1, January, 1950, Pages 105-106 (2 pages). A high-intensity mercury arc lamp has just been announced by the Huggins Laboratories of Menlo Park, California. The lamp attains a maximum brilliance of 90,000 candles per square cm. at 1.2 amps and 1750 volts, operating from an accompanying power supply.

* COLORED LIGHTING FOR PROCESS CAMERAS. Richard W. Brendel. *National Lithographer* 57, No. 2, February, 1950, Pages 42, 43, 75, 77 (4 pages). A detailed discussion of the nine advantages of fluorescent copy-board illumination, including better control of tone and color, better balance, increased sharpness, more comfort and less cost. Practical illustrations of both water color and oils shot by the author are given.

Lenses

* A METHOD FOR TESTING RESOLVING POWER OF PROCESS LENSES. C. A. Hunting. *Photo-Engravers Bulletin* 39, No. 1, August, 1949, pp. 13-19 (7 pages). (Paper Given at TALI Meeting, April 13, 1949). A method is described which employs equipment commonly available or easily made in the average graphic arts establishment whereby the resolution characteristics of a lens can be evaluated with greater precision and throughout a greater range of conditions than can be done by more conventional methods. The method involves the use of a systematic set of converging lines constructed to stated specifications and interpreted in conjunction with a simple equation.

* A METHOD OF EVALUATING RESOLUTION CHARACTERISTICS OF A PROCESS LENS. C. A. Hunting. Part I. *Modern Lithography* 18, No. 1, January, 1950, Pages 52-54 (3 pages). Outline of method of checking lens resolution. Lens resolutions test targets are illustrated together with a brief description of construction of the master target wedge. Part II. *Modern Lithography* 18, No. 2, February, 1950, Pages 53-55 (3 pages). Description of the procedure followed when testing lens resolution with a master target wedge.

* LENS CORRECTIONS AND FOCUSING METHODS. P. C. Smethurst. *Process Engraver's Monthly* 57, No. 673, January, 1950, Pages 6, 9 (2 pages). The fundamental differences in lens requirements for halftone and line reproduction are discussed. The halftone process does not demand critical resolution of fine detail, but must resolve two tones of low contrast in juxtaposition and be well corrected chromatically. Line photography requires critical resolution. The need for better lenses for line work is stressed.

• ACCURATE FOCUSING IN LINE WORK. P. C. Smethurst. *Process Engravers' Monthly* 57, No. 674, February, 1950, Pages 38, 41 (2 pages). The method of focusing with a 100X microscope in the focal plane is approximately ten times as accurate as focusing by the parallax method. The reasons for this difference are discussed.

• PHOTOMECHANICAL MATERIALS IN CURRENT USE. F. H. Smith. *Photographic Journal* 90B, No. 2, March-April, 1950, Pages 53-56 (4 pages). The uses of wet-plate and dry-plate materials are broadly compared and several special materials are briefly discussed. A suggestion is made for the use of double-coated material in the production of direct reversed photo-litho half-tone positives and some details are given of the "Multichrom" and "Regal" cameras and of modern lens assemblies. A description of the "True-to-Scale" process for multicolour printing in small editions is contributed.

• LENS FLARE IN PROCESS CAMERA. J. A. C. Yule, *Lithographers Journal* 35, No. 2, May, 1950, Pages 11 & 46 (2 pages). The effects of lens flare are a decrease on overall contrast and a flattening of the shadows. The usual techniques of decreasing exposure and increasing development remedies the first effect only. Flare can be measured on a standard target of a square gray patch with one white and one black strip in the center. Expose this on process film through a step tablet which has been placed in the position of the image of the white strip. Per cent flare is then given by the transmission of the tablet step whose image matches density with that of the black strip, minus the reflection of the black strip.

SPIRAL FOCUSING SCALE. Frank T. Powers. *Official Gazette* 634, No. 4, May 23, 1950, Page 1163. United States Patent Number 2,508,649. In a process camera having a film support, a copy support and a lens between said supports, focusing means including in combination two rotary scale members, one rotated by relative movement of the film support and lens and the other by relative movement of the lens and copy board and two independently movable index means for each rotary scale member one being variably positionable for reduction and the other variably positionable for enlarging, each scale member having thereon an elongated scale comprising a plurality of convolutions and a series of progressively increasingly inclined lines between said convolutions to co-operate with said index means.

• LENS AND CAMERA FLARE. George W. Jorgensen. *Graphic Arts Monthly* 22, No. 6, June 1950, Pages 74, 76 & 78 (3 pages). Flare is additional exposure where it does not belong. Flare can be caused by a bright light shining into the camera lens resulting in irregularly shaped marks on the negative. Another class of flare, most commonly encountered by process cameramen, has the effect of a uniform flash or fogging exposure over the entire image. This type of flare can be caused by the lens, copyboard, lights, camera, bellows or any combination of these. Inter-reflections resulting as light passes each air-glass surface of lens elements cause flare, which is accentuated by any oil film, dirt, etched surface or scratches that are present. Flare in lenses can be minimized by careful cleaning, cemented elements and application of special coatings. Dust in the bellows can also cause flare. This can be reduced by cleaning and the use of baffles or blinds in the camera. Flare can also result from the use of a cover glass on the copy board and improperly placed lights. Reflected light from light colored walls will reduce contrast on the negative. Once precautions are taken to minimize flare it

will be noticed that slightly longer exposures will be necessary with small stops in halftone shots and that exposures for line shots will be less critical. However, dust specks will be more pronounced necessitating some opaquing.

Diaphragm control systems

HALFTONE DIAPHRAGM CONTROL. Richard P. Newick. *Official Gazette* 628, No. 5, November, 1949. *U. S. Patent No. 2,489,804.* In a halftone exposure device, a variable aperture type diaphragm, a primary operating member, and operative connections between the latter and the diaphragm including a lost motion connection operative over a part of the movement only of the operating member, whereby the diaphragm remains at a fixed aperture for a time, and including an adjustable member operative to cause initiation of the lost motion relation between diaphragm and primary operating member at a predetermined part of movement of the device, variable at will.

Crossline and related screens

* THE OPTICAL V PRINCIPLE. F. E. Ives. *Process Engraver's Monthly* 56, No. 666, June, 1949, p. 170. In his second lecture, F. E. Ives continued his discussion of the Optical V Principle and showed its relation to the operation of the halftone screen. He pointed out the role played by diffraction in the formation of the screen image and the effects of screen distance and aperture size and shape.

* 30 SECOND HALFTONES. Milton Ruderman. *National Lithographer* 56, No. 9, September, 1949, pp. 26-27. A two step method for shooting halftones with short exposure times is offered. With an 18" lens and 133 line screen the author uses a screen distance of .187 inches, and which he claims is very critical. He then makes one highlight and one flash exposure, each of only 15 seconds. A table is presented, giving recommended steps for various enlargement ratios.

* HALFTONE SCREENS FOR LITHOGRAPHY. J. S. Mertle. *National Lithographer.* 56, No. 11, November 1949. In this article Mr. Mertle describes the irregular dot arrangement of the Hemsath screen and the double screen arrangement of Richter, each process being intended to increase the highlighting effect. The Dargavel wavy line screen which was introduced for newspaper reproduction of portraits, and the Jacobi screen which in addition to the regular crossline ruling had a secondary set of finer rulings also described.

* HALFTONE SCREENS FOR LITHOGRAPHY. J. S. Mertle. *National Lithographer* 57, Number 1, January, 1950, Page 38 and 63 (2 pages). Continuing the history of halftone screens, the author discusses the irregular polygon screens of Ludwig Bohm, the Larson screen for highlighting, the screen manufacturing techniques of the Herbst and Illig, firm of Germany, the Swiss Orell-Fussli screens, A. Ronald Trists Contact screens, the Efha-Rssterwerk screens, the T. Crawford Erwin lenticular grain screen, the Victor C. Ernst lenticular screen, the Grafa-Tone wavy line screen and the wire mesh or fabric screens of Rowell and Norris.

* HALFTONE SCREENS FOR LITHOGRAPHY. J. S. Mertle. *National Lithographer* 57, No. 3, March, 1950, Pages 40, 83 and 84 (3 pages). In this article Mr. Mertle discusses Kodagraph contact screens. The history of their manufacture and the first commercial users of the screens are mentioned. The processing procedure for the orange contact screen is given. In order to reduce the processing procedure required by the

use of the orange contact screen and to produce a contact screen for direct use in the camera the magenta contact screen was introduced. This screen introduced during the war has since been used by the photoengraver as well as the photo-lithographer.

Retouching and dot etching

* STAGING VARNISHES FOR DOT ETCHERS. George J. Lenser. *National Lithographer* 57, Number 1, January, 1950, Page 40 (1 page). A new formula for staging varnish is given which has been found to be more effective than other staging solutions commonly used.

* DOT ETCHING. J. S. Mertle. *Graphic Arts Monthly* 22, No. 2, February, 1950, Page 102 (1 page). If etching was done with Farmer's reducer, it frequently is possible to restore lost dots by redevelopment of the etched image. This involves treating the positive with: water—16 ounces, Metol—120 grains, Citric acid—75 grains. A 5% solution of silver nitrate in distilled water also is prepared. Immediately before use, add 3 ounces of the silver solution to 9 ounces of the metol mixture, then apply the solution to the positive in bright light and for such time as to restore the vanished dots to their proper size.

Tone and color correction

* A STREAMLINED SURVEY OF COLOR CORRECTION METHODS. Frank Preucil. *National Lithographer* 56, No. 6, June, 1949, pp. 42-3; No. 7, July, 1949, pp. 32, 33; No. 8, August, 1949, pp. 26-27 (6 pages). (Paper Given at TALI Meeting, April 13). The normal deficiencies of color separation negatives are briefly outlined and about 50 of the suggested methods for improvement described. Three general classes are considered—namely, masking and related methods, special copy preparation, and electro optical scanning systems.

* COLOR CORRECTION BY ELECTRONICS. J. R. GUNTHER. *Modern Lithographer* 17, No. 10, October, 1949, Pp. 47, 48, 149. Because of the inherent shortcomings of filters, emulsions and inks considerable hand retouching must be done on color separations which can be expressed mathematically. Though extremely complicated, these equations can be solved by an electronic apparatus designed by Dr. A. C. Hardy and F. E. Wurzburg Jr., and now in its test stages. The mathematical functions are simultaneous equations in three unknowns, relating the color of a reproduction (expressed in a standard 3-coordinate system) to the dot sizes of the printing inks, which are the three variables determining that color. Ink and paper color are constants for any operation. The device scans the copy, automatically expressing its colors in terms of the standard 3-coordinate system. It then computes the dot sizes necessary to recombine into that color, and photographs those dots into each of the separation negatives in turn, thus it can turn out color corrected halftone separations at a rate of 1 square inch in 10 to 20 sec. For same size reproduction the original can be used directly. For other than same size, continuous tone positives of the desired size are used from which the apparatus makes color-corrected half-tone negatives.

Color—general

* COLOR DENSITOMETER FOR PHOTOGRAPHY. *Instruments* 22, No. 12, December, 1949, P. 1111 (1 page). New "Spectra" color densitometer is entirely photoelectric in operation. Readings may be taken from 0.0 to 4.0 density, on either black-and-white or color films. Present model is designed to work primarily with standard IIa or IIb densitom-

eter strips used in most laboratories; other models will be available for reading densities on large negatives and transparencies, and on opaque copy. Narrow band filters are mounted: red for reading cyan densities, green for magenta and blue for yellow. Photo Research Corp., 127 W. Alameda Avenue, Burbank, California.

* COLOR TEMPERATURE INDICATOR. *Instruments* 22, No. 12, December, 1949, P. 1116 (1 page). New "Spectra" type "B" color-temperature indicator is direct-reading. User points it at source of illumination rotates a ring until pointer is brought to zero, then reads from a scale either color temperature in degrees Kelvin or number of filter required to bring the light in to balance with the color film being used. For use both indoors and out, instrument has four scales: one reads degrees Kelvin from 2600 to 10,000; other three are for daylight, Type A and Type B film, reading directly in filter numbers. Instrument is designed to work with "CT" filters marketed by maker and also Eastman CC and Harrison filters. Photo Research Corp., 127 West Alameda Avenue, Burbank, California.

* COLORED LIGHTING FOR PROCESS CAMERA. Richard W. Brendel. *National Lithographer* 57, Number 1, January, 1950, Pages 28, 29, and 65 (3 pages). The construction of fluorescent lamp holders for color separation photography and the advantages of their use is described.

* FALSE COLORS AND INVISIBLE LIGHTS FOR BETTER SEPARATIONS. Frank Preucil. *National Lithographer* 57, Number 1, January, 1950, Pages 34-35 (2 pages). The use of specially prepared or retouched originals with the aim of making them more easily reproduced without extensive color correction work on the negatives or halftones is discussed. Among the methods of preparing these originals are: The use of overlays of lighter colors, the use of the ultra violet and infra red reflectivities of pigments, and unbalanced color transparencies.

* CONTRAST CONTROL. Robert G. Patterson. *American Photo-Engraver* 42, No. 4, April, 1950, Pages 346-348 (3 pages). Because of the recent development of the three-point registration bar there has been a gradual reversion to the indirect method of color separation in photoengraving. A step wise outline of the procedure followed, using the registration bar, is described in the article. This tool is not manufactured on such a scale that it is available to many shops and therefore must be constructed from blueprints which are sent upon request.

IMPROVEMENTS IN PHOTOGRAVURE, LETTERPRESS HALFTONE, AND PHOTO-OFFSET COLOUR PRINTING PROCESSES AND APPARATUS THEREOF. Harold Edward Alexander, Frederick Cook and Son Printers Ltd. *British Patent No. 631,274.* Heretofore there has been difficulty in reproducing the combination of color transparency and lettering of a lighter color than the transparency. There has been invented a projector-camera which will permit color separations to be made of such combination and allow the color of the lettering to be varied as desired. Variation in the color of the lettering is done by means of filters. Operational procedure, sketches of the device and claims of the inventor are described in detail.

* COLOR TEMPERATURE: ITS USE IN COLOR PHOTOGRAPHY. O. E. Miller. *Journal of the Society of Motion Picture Engineers* 54, No. 4, April, 1950, Pages 435-44 (10 pages). Color temperature as a specification for light

sources is inadequate to define any light source for color photography which departs appreciably in energy distribution from the black body. It should probably be restricted to use with tungsten incandescent lamps only. Meters devised to measure color temperature by means of measurements of the relative energy in two wave length bands are likewise not trustworthy when applied to any but the black-body sources. A "three-point", rather than a "two-point", meter is needed for the precise control of photographic exposures. Such a meter should have sensitivity distributions that match those of the three emulsion layers of the color film.

* DETAILS ANNOUNCED ON TIME COLOR SCANNER. *Modern Lithography* 18, No. 5, May, 1950, Pages 28, 31 & 105 (3 pages). The Time color scanner was shown recently to the graphic arts industries in exhibits in New York and Chicago. The Scanner is an optical and electronic device furnishing balanced 4-color separations from transparent copy. It is expected to give an impetus to quality reproduction.

* OPTICAL MACHINE THAT CONVERTS BLACK AND WHITE FILMS INTO FULL COLOR. *Photo-Engravers* Bulletin 39, No. 11, June 1950, Pages 13-17. (5 pages). An instrument is being developed by Dr. Adrian Le Roy of the International Research Laboratories of Hollywood, called the Le Roy Color-Viser. It is designed to produce a full color image, by projection, from the four half-tone positives. Retouching can be performed while the positives are in place, to show immediately the effect of hand work.

* COLORED LIGHTING FOR COLOR SEPARATIONS. Ernest P. Taubes. *PSA Journal* 16, No. 6, June 1950, Pages 39-42 (4 pages). In the past there have been several attempts to replace the tricolor separation filters with colored lights. For one reason or another they have been declared impractical and abandoned. The General Electric Company Research Laboratories at Nela Park has developed a colored light source by exciting fluorescent powders in slimline tubes with ultraviolet energy. The lamps consist of a heavy base, a central support, a four-sided turret, and four sets of reflectors and filters. It is reported that these lamps have certain advantages over carbon arc illumination such as: (1) better tone control and sharper color separation, (2) minimizing of pinpoint highlights, (3) better rendition of surface colors, (4) elimination of unwarranted contrast, (5) better balanced separations, (6) more comfortable and cleaner operating conditions, and (7) cheaper installations and operational costs. Moreover, in the photographing of color transparencies it is found that there are additional advantages: (1) minimizing of highlights in the lighter tone color areas, (2) transparencies can be held in perfect register with a mask during exposure. These advantages have been proved in practical commercial use by photo lithographers.

PROCESS FOR OBTAINING COLOR SEPARATIONS FROM MULTILAYER PHOTOGRAPHIC FILM. Andrew Bradshaw Jennings. *Official Gazette* 635, No. 2, June 13, 1950, Page 467. *United States Patent No. 2,511,112.* The process which comprises developing an exposed photographic element comprising a transparent film base having superimposed thereon in order a water-permeable gelatin silver halide layer which is sensitive to blue light and contains a yellow colloidal silver, a water-permeable light-insensitive gelatin layer, and a water-permeable silver halide layer which is sensitive to a different primary color of the visible spectrum, fixing said element and removing said

light-insensitive layer and outer-light-sensitive layer by treatment in an aqueous bath, said process being further characterized in that prior to removing said layers the element is treated in an aqueous bath containing a gelatin hardening agent which reacts with the colloidal silver in the blue-sensitive layer to uniformly harden the gelatin of said layer.

Color photography—general

• EKTACOLOR FOR LITHOGRAPHY? Frank Preucil. *National Lithographer* 57, No. 3, March, 1950, Pages 34, 35 and 84 (3 pages). The features of Ektacolor which can make it useful in graphic arts color separation are the creation of three negative images in color and two positive mask images, with only three emulsion layers and a single developing step. Mask images are created in magenta and cyan layers which are opposite in sign and nullify any unwanted absorption of blue or green light. Mask color should not record during red filter exposure, but be effective during blue filter exposure. Orange mask in cyan layer should record with green filter. Brief mention is made of the improved Kodacolor and the Anscocolor color corrected color negative films. The article lists all governing patent numbers where details on the Ektacolor, Kodacolor, Anscocolor color corrected color negative processes may be found.

• EKTACOLOR FOR LITHOGRAPHY. Frank Preucil. *National Lithographer* 57, No. 2, February, 1950, Pages 44, 45 (2 pages). Ektacolor film may be useful for making color separation negatives. By using F, N and 70 filters the yellow printer is improved in the cyans, magentas and violets; the red is removed from the greens, and the blue separation is cleaner in the magentas, reds and yellows. There is no undercolor correction, and additional masks may be desirable to improve saturation.

• THE FLEXICHROME PROCESS. *American Photography* 44, No. 5, May, 1950, Pages 46 & 48 (2 pages). Flexichrome—a Kodak process for making color prints from black and white transparencies. The transparency is contacted or enlarged onto the Flexichrome Stripping Film, which is developed and bleached to a positive relief image. The image is dyed and stripped onto a permanent backing. When dry it can be colored with the Flexichrome dyes, which are taken up by the print in proportion to the amount of gelatin present. In this way dye can be applied in broad brush strokes but will automatically appear in the proper tone gradations when the excess is blotted off. A dye application replaces any dye previously in the area.

• HOW TO PROVE COLOR JOBS PHOTOGRAPHICALLY. Franklin R. Payer. *Modern Lithography* 18, No. 4, April, 1950, Pages 37 & 105 (2 pages). The method and procedure for proving color jobs by means of a dye-transfer process. The process yields a color print which can be used as a proof for the artist when retouching separation negatives. It is also suggested that this print can be used as a job proof in plants which do not have a proving press. This photoproof is especially valuable to those shops specializing in "direct" half-tone separations. Formulas and procedure outline are given.

Masking methods

• BETTER MASKS FOR KODACHROME. Frank Preucil. *National Lithographer* 56, No. 11, November, 1949. The use of highlight masks for tone correction on kodachromes is described. The highlight masks can be made separately or included in special emulsions

used for the color correction mask. Also described are color correction masks which are an integral part of multi-layer color materials such as Ektacolor, Kodacolor, and German Agfacolor Negative Positive material.

• SUBTRACTIVE COLOR REPRODUCTION. THE APPROXIMATE REPRODUCTION OF SELECTED COLORS. W. L. Brewer, W. T. Hanson and C. A. Horton. *Journal of the Optical Society of America.* 39, No. 11, November, 1949. Proper use of masking in subtractive color photography is dependent upon a means of establishing the color reproduction equations which give the values of the mask gammas. Rule has shown that such equations can be obtained from an extension of the principles of duplicating while MacAdam has done so by treating the subtractive system in terms of an equivalent additive system. Marriage has demonstrated that a specification of the requirements necessary for the exact reprōduction of any four selected colors can be used to derive a unique set of equations. In the present paper, it is shown that Marriage's method can be extended to include colors in any number greater than four, provided "approximate reproduction" rather than "exact reproduction" is taken as the criterion. The resulting equations will depend upon the manner in which the criterion of approximate reproduction is applied, as well as upon the particular selection of colors to be reproduced. While these aspects of the problem have not been investigated, results have been obtained which appear to be reasonable. The method may be applied to any assumed types of sensitivity distributions and forms of color reproduction equations.

• PROCESS PROFILE. R. L. Taylor. *Process Engraver's Monthly* 56, No. 671, November, 1949, Pages 328-330 (3 pages). The author describes a simplified mask technique which, using two 40 per cent positive masks, effects color correction without introducing tone reproduction errors. The mainpoint in this technique is to make all separations to the same gamma and the red filter negative is masked with a 40 per cent positive made from the red filter separation.

• MASKS, DEFICIENCY AREA NO. 1. Henry R. Long. *National Lithographer* 57, No. 2, February, 1950, Pages 34-35 (2 pages). The lithographic artist corrects four "deficiency areas": tone correction, color correction, simplification and insertion. Since three of these are found in black and white it can be said that color correction masking alone does not greatly reduce the retouching required. To the author's knowledge no one mask will accomplish both tone and color correction. The major defect of most tone correction schemes is that in order to drop out highlights and render solids as solids, the adjacent tones are distorted. The artist's skill is still the only guarantee of facsimile reproduction.

• MASKS—DEFICIENCY AREA NO. 2. Henry R. Long. *National Lithographer* 57, No. 3, March, 1950, Pages 30, 31 and 81 (3 pages). Second in a series of discussions on the problems of masking. This article deals with the problem of dyes in filters used in photographic color separation, in emulsions, and finally, pigments in printing inks. Listed in the article are the requirements for the ideal set of tricolor inks and mention is made of how litho inks react to different paper stocks. Mr. Long discusses the overlapping of transmission and absorption of filters and how masking helps to correct this phenomenon. He suggests that the litho artist is best qualified to make or at least pass judgment on the making of these masks.

• MASK DEFICIENCY AREA NO. 3. Henry R. Long. *National Lithographer* 57, No. 4, April, 1950, Pages 34-35 and 80-81 (4 pages). Available process inks

do not approach theoretical color requirements, therefore mixtures of three inks contain more black than they should (are degraded). An example is given where the necessary correction is accomplished by partial removal of the two lesser important colors. In the interests of press operation undercolor removal should go beyond this correction for saturation, and should allow the black plate to carry depth and drawing. In general, a black mask should be made from a proper combination of negatives and positives to eliminate black from the pure colors. The masked black should then be exposed onto the masks for the yellow, cyan and magenta to give accurate undercolor correction.

* MASKS, DEFICIENCY AREA NO. 4. Henry R. Long. *National Lithographer* 57, No. 6, June 1950, Pages 32-33 & 66 (3 pages). The fourth deficiency area includes four manual operations; (1) formation of the fifth color, (2) insertion of type matter, (3) increase of detail by using the unsharp mask, (4) borders, cropping and combining of material. It is maintained that these manual operations performed by the lithographic artist can be simulated photographically with proper equipment. The lithographic artist because he is skilled and experienced in judgment of color values is the person qualified to produce the masks required for color correction and above manual operations. By means of a color correction unit these masks can be produced easily and without tying up the process camera.

Photoelectric tone control

* ELECTRONIC SCANNERS FOR COLOR CORRECTION. Frank Preucil. *National Lithographer* 57, No. 6, June 1950, Pages 40-41, 87 & 89 (4 pages). The operation of the Time-Life Electronic Color Scanner is described. Color corrected separations are made according to the densities of the original transparency. If the original is opaque copy a transparency, usually an Ektachrome, is made first. The electronic circuits are then adjusted in accordance with densities. A tiny spot of light scans the transparency and the rays passing thru are filtered thru the tri-color filters. The respective electronic circuits produce the separation negatives. The black printer is produced by feeding these currents thru another circuit which determines the greying component of the tri-color mixture. By subtracting a percentage of the black from the other three negatives a balanced set of four negatives is obtained. The scanner scans 250 or 500 lines per inch from 8 x 10 or 4 x 5 transparency originals. thru are filtered thru the tri-color fil- Scanning time is about 65 minutes for a 250 line, 8 x 10 or 500 line, 4 x 5. Cost of machine is about $65,000.

Photographic typesetting

* PHOTO TYPESETTING MACHINE. Anon. *Printing Equipment Engineer*. 79, No. 2, November, 1949. This is a description of the laboratory demonstration of the Lithomat Photo-Typesetting machine for I. T. C. A. convention members, Oct., 1949. The Lithomat system consists of four basic parts: (1) An electric Typewriter, (2) A "memory" unit, (3) A counter-justifier which is an electrical computing and control system, and (4) An automatic photographic unit which photographs the letter characters one by one on sensitized film. Details concerning the background and present state of the machine are given.

* PHOTO-TYPESETTING 1896-1950. Robert E. Rossell. *Modern Lithography* 18, Number 1, January, 1950, Pages 24-28. (5 pages). Brief descriptions of photo-

typesetting machines representing developments from 1896 to date. Most attention is given machines recently proposed or offered, namely, the Intertype Fotosetter, Hubner Phototextype, Westover Rotofoto, ATF-Hadego, Lithomat, and Monotype. The Ogden-Rutherford machine for setting display type is included.

General

• SOMETHING NEW UNDER THE SUN—GELB LAMP. Anon. *The Photo-engravers Bulletin*. XXXIX, No. 4, November, 1949. In the new Gelb vacuum printing frame a mercury tube light source travels from edge to edge across the flat, thereby furnishing even intensity from a band of substantially parallel light rays. The light source is of high intensity and low cost, requiring only 8 amperes. Exposure time is approximately ½ that of conventional 35 amp. carbon arcs. Two other features are the control which simultaneously locks the cover glass and starts the vacuum, and the Gelb Self-Pressurized blanket which holds the flat to the plate without danger of slipping.

• DRY OFFSET. *Photo-Engraver's Bulletin* 39, No. 4, November, 1949, Pages 73-75 (3 pages). "Dry offset" is the term used to describe offset printing where the non-image areas of a lithographic plate are etched below the surface. Such a plate requires no water. The author claims these plates are now being used on rough cardboard stock, and recommends magnesium as a good plate metal.

PROGRESS IN PLATE COATING. *Photo-Engravers' Bulletin* 39, No. 4, November, 1949, Pages 50-53 (4 pages). The new Verticote, developed by the Consolidated Photo Engravers Equipment Co. is a "capillary" coating device. The plate to be coated either for lithographing or photoengraving, forms the fourth side of a rectangular tank, or fountain. Coating is accomplished by filling the fountain with coating solution and drawing the plate vertically upward. Great evenness of coating is claimed.

PROGRESS IN PLATE COATING. *Photo-Engravers' Bulletin* 39, No. 4, November, 1949, Pages 50-53 (4 pages). The new Verticote, developed by the Consolidated Photo Engravers Equipment Co. is a "capillary" coating device. The plate to be coated either for lithographing or photoengraving, forms the fourth side of a rectangular tank, or fountain. Coating is accomplished by filling the fountain with coating solution and drawing the plate vertically upward. Great evenness of coating is claimed.

PROCESSES OF LIGHT HARDENING. *Buchgewerbe*, 1949, 4 (8), 210-12 (In German). The colloids used in light-hardening layers used in photomechanical reproduction are listed under carbohydrates, proteins, cellulose, derivatives, natural resins, asphalts, synthetic resins and colloidal (diazo) dyestuffs. The nature of the process taking place during the light-hardening of dichromated layers is discussed. *Printing Abstracts* 4, No. 11, November, 1949, P. 560.

PHOTOLITHOGRAPHIC PRINTING MATERIALS. Charles Howard Mitson and Erich Eduard Loening. *Official Gazette* 630, No. 2, January 10, 1950, P. 469. *United States Patent No. 2,494,053*. A method of forming a design in a printing sheet of an ink-receptive material which comprises uniformly hydrolyzing a surface of said sheet to render said surface ink-repellent when wet; selectively removing areas of the surface that has been uniformly hydrolyzed while protecting the remaining areas of said surface by means of a stencil of an image superposed on the hydrolyzed surface, and therefore removing the stencil to expose the protected hydrolyzed areas.

• PROOF PRINTING APPARATUS. *I G T Nieuws* No. 3, November, 1949, P. 37-39 (3 pages). An apparatus for testing ink and paper is described. A paper specimen is fastened on the surface of a bronze sector. The sector is set in motion by releasing a weighted lever which brings the paper into printing contact with an inked drum at an increasing rate, producing an impression. The printing properties of paper, namely, ink compatability and resistance to picking and splitting, can be investigated.

* TRY CELLULOSE ETCH BY ITSELF. Anon. *Lithographers Journal* 34, Number 10, January, 1950, Page 10, (1 page). For platemakers who have had trouble with cellulose gum in the past, it is suggested that only the cellulose gum plate etch be used, and then gum up with gum arabic. This will improve plate densitization considerably, and there will be no trouble washing out the plates. A new, simplified formula for making a plate etch with cellulose gum is given. Also, a review is given of the LTF etching technique, with reasons for each step.

*PHOTOGELATINE — THE SCREENLESS PRINTING PROCESS. Summary of an address delivered by Walter Fredrick and Thomas D. Hook, before the Cleveland Club of Printing House Craftsmen, February, 1950. *Printing Equipment Engineer* 79, No. 6, March, 1950, Pages 29, 58 and 60 (3 pages). A brief, non-technical step by step description of the Photogelatine or Collotype printing process.

* LITHOGRAPHIC BLANKETS. E. Gurin. *National Lithographer* 57, No. 4, April, 1950, Pages 28-29 and 82 (3 pages). After a brief description of how offset blankets are made the author tells how a blanket should be put on the press and recommends as a wash a petroleum solvent with a boiling range of 190-260°F. A faster evaporating wash is difficult to handle and a slower evaporating wash swells the blanket too much. Special blankets of low absorbency have been developed for use with heat-set inks.

* THE NEW COLLOID LITHO PLATE. Robert J. Lefebvre. *National Lithographer* 57, No. 4, April, 1950, Pages 32-33 (2 pages). A new steel based poly vinyl surface plate is described. The plate is significant mainly from a cost standpoint, in that it reduces the overall cost of platemaking. It is possible to make corrections on the surface of this plate and it is very easy to make draftings upon. At present, a disadvantage inherent with these plates is size limitation (25" x 36") which is a drawback for plants with larger size presses.

OXIDATION OF ZINC PLATES AND SOMETHING ABOUT GRAINING AND COUNTER-ETCHING. *I. G. T. Nieuws* 3, No. 1, September, 1949, Pages 4-7 (4 pages). The essentials of a good graining process, the prevention of oxidation during graining by the addition of dichromate, counter etching, heat-sensitive inks, and the tinting of offset plates by lead driers are discussed. *Printing Abstracts* 5, No. 3, March, 1950, Page 131.

METHOD OF TREATING ALUMINUM SURFACES. Ralph B. Mason. *Official Gazette* 634, No. 2, May 9, 1950, Page 600. *United States Patent Number 2,507,314.* The method of preparing an aluminum surface for use as a printing surface, which comprises treating the aluminum surface with a solution containing alkali metal fluoride and nonfluoride alkali metal salt until substantial reaction ceases, subjecting the treated surface to the action of acid to reactivate the same and thereafter repeating the fluoride and acid treatments in the sequence stated.

* MAGNESIUM FOR DRY OFFSET? *National Lithographer* 57, No. 6, June 1950, Pages 42, 85 & 87 (3 pages). This article describes a combination of the lithographic and photo-engraving processes for the production of a dry offset plate of magnesium. A sensitive coating spread upon a magnesium plate is exposed through use of a photo-composing machine following standard offset plate procedure. This plate is then etched to a desired depth by photo-engraving methods. On plates 0.032 inches thick the plate is etched to a

depth not exceeding 0.015 inches, and on plates 0.025 inches thick to a depth not exceeding 0.010 inches. The author states that magnesium produces a finer grain than copper, and is capable of producing fine halftones regardless of screen. Durability tests showed one plate capable of running continuously for over 2 years at a speed of 350 feet per minute. Standard fine ground, strong colored typographic inks are used with this process.

* PRINCIPLES OF OFFSET PLATEMAKING. Howard T. Barbig. *American Pressman* 59, No. 7, June, 1949, pp. 26, 28, 62, 64-6; No. 8, July, 1949, pp. 12, 13, 66, 68, 70, 72-5 (15 pages). A general article which discusses the various problems and troubles in the making and running of albumin and deep-etch plates. The processing of Tri-metal plates is discussed also.

* STRETCHES OFFSET PLATES TO CORRECT REGISTER. *British and Colonial Printer* 145, No. 1082, July 29, 1949, p. 98 (1 page). A litho "plate-stretcher" is being marketed by Linmac Engineers, Ltd. of Wembley, Middlesex, England. It is designed to correct register errors in offset printing. It is claimed that variations in register from as little as .003" up to as much as 7/64" can be corrected.

METHOD OF REGRAINING ALUMINUM PLATES. Robert L. Heath and Edmund C. Huxley, assignors to General Motors Corporation. *United States Patent No. 2,476,413* (July 19, 1949). The method of reclaiming coating grained aluminum lithographic plates which includes removing the coatings and the images carried thereby from the plates by immersing them alternately in a nitric-sulfuric acid solution and a caustic soda solution, and then regraining the plates by immersing them in an aluminized soduim carbonate solution. (*Official Gazette* 624, No. 3, July 19, 1949, p. 794.)

* COATING THICKNESS AND ITS IMPORTANCE IN LITHOGRAPHIC PLATEMAKING AND PERFORMANCE. Herbert R. Leedy. *Modern Lithographer* 17, No. 9, September, 1949, pp. 51-54. A discussion of the factors which effect coating thickness on litho plates, and the role played by grain, the coating device used, humidity, air circulation, etc. It is concluded that a new coating device is needed, which will give more uniform coating thickness.

* NEW OFFSET PRINTING PLATES. *Der Polygraph*, October, 1949 (20 of Oct.) (In German). Algraphy Ltd. have developed an anodized aluminum litho plate. The original plate is given a fine grain before anodizing. The plate may be counter etched with nitric or sulfuric acid. Plate making is by the usual methods. Deep etching is accomplished with saturated iron perchloride solution. Broad claims are made for performance of the plate.

PHOTO - MECHANICAL PRINTING PLATES. A. G. Akomfina. *British Patent No. 626,844*. A light metal plate (e.g. an aluminum, aluminum alloy or magnesium plate) is immersed in lye, a light-sensitive layer applied, exposed through a diapositive, developed, the plate coated with an alcoholic solution containing at least one metal salt which reacts with the bare metal of the plate so as to form a firmly adhering metallic layer, and, finally, the hardened colloid removed. Where a heavier metal such as zinc or copper is used as the base metal, the metal solution may be aqueous or alcoholic. *Printing Abstract* 4, No. 11, November, 1949, P. 559.

* THE ALLER OFFSET PLATE. *American Pressman* 60, No. 1, December, 1949, P. 38 (1 page). The article tells little about the Aller plate, but it is concerned with roller stripping. A method

was developed of using an alcoholic iodine solution on the rollers, after the rollers were washed. Any iodine which gets on the plates can be removed with asphaltum. The idodine has even been left on the rollers over night, and the press inked up the next day over the iodine film. The iodine film should be completely dry before the press is inked up. The iodine solution was used twice a day.

SURFACE TREATMENT OF ALUMINUM AND ALUMINUM BASE ALLOYS. H. R. Watson and A. T. Ward. *British Patent No. 626,693.* The difficulty experienced in electroplating on aluminum (or its alloys), due to the oxide coating formed on it, is overcome by immersing in a hot aqueous solution of a sodium compound, a nickel compound, a tin compound, a carbonate, a chloride, and a hydroxide, the tin being present in amounts not less than would be provided by ¼ oz. of stannous chloride in 1 gallon of water, the nickel and carbonate in amounts not less than would be provided by ¼ oz. of nickel carbonate in 1 gallon of water and the hydroxide in amounts not less than would be provided by 3 oz. of caustic soda in 1 gallon of water. *Printing Abstracts* 4, No. 11, November, 1949, Page 559.

* PHOTO-ENGRAVED OFFSET. Robert G. Patterson. *American Photo-Engraver* XLI, No. 10, October, 1949, P. 1051-52. The use of relief etched magnesium printing plates on an offset press is described. These plates require no dampening and no grain. It is pointed out that the production of these plates make use of apparatus common to the photo-engraving industry, and that photo-engravers are the craftsmen who have the "know how" to produce these plates.

PRODUCTION OF PLANOGRAPHIC PRINTING PLATES. D. A. Newman. Planographic printing plates are produced by applying a coating the essential film-forming constituent of which consists of a carboxymethyl ether of cellulose or a salt or derivative thereof, to a paper foundation and then applying an ink-receptive, water-repellent image. The base paper has preferably been treated with a wet strengthening agent such as a melamine or ureaformaldehyde. *Printing Abstracts* 4, No. 8, August, 1949, P. 407.

NEW METHOD FOR MAKING OFFSET PLATES: USE OF PHOTOGRAPHIC EMULSION AS STENCIL KEY TO UNIQUE DEVELOPMENT. K. Martin. *New England Printer*, November, 1948, P. 40 (D853.93/5011). It is believed that the use of a photographic emulsion merely as a stencil in offset plate making is unique and application has been made for a patent for the process in the U. S. Satisfactory exposure can be made in 15 sec. No. 1 Photoflood at 7 ft. is used as light source. With this type of emulsion a bright yellow light can be used for darkroom illumination. However, for projection work, it would probably be desirable to use a somewhat faster emulsion. Other advantages are keeping quality, good printing quality and durability. Some details of the process are given. *Printing Abstracts* 4, No. 8, August, 1949, P. 408.

* WASHING OUT PLATES. Charles F. King. *Inland Printer* 123, No. 5, August, 1949. PP. 75, 76, 77. When plates fail to wash out properly, there is usually a film of gum on top of the developing ink. It is recommended that plates be washed out in the platemaking department to save press time. A solvent washout mixture is mentioned which will remove the dried developing ink and gum from albumin or deep-etch plates. Unfortunately, the name of this mixture is not given, but considerable information is given as to how to use it.

METHOD OF MAKING HYDROLYZED CELLULOSE ACETATE PRINTING PLATES. Henry C. Staehle

and Charles F. Amering. *U. S. Patent Number* 2,484,431 (July 17, 1948). The method of making a photolithographic printing plate which comprises coating a substantially fully esterifield cellulose organic acid ester support with a layer of bicromated hydrophillic colloid containing an aqueous colloidal dispersion of a water-insoluble, soft, acrylate resin exposing the colloid layer to light under an image, treating the exposed layer with hot water to swell the colloid in the exposed regions of the layer and to remove the colloid from the unexposed regions of the layer without removing the resin, treating the layer with a hydrolyzing solution to hydrolyze the portions of the cellulose ester support beneath the exposed regions of the colloid layer and removing all of the colloid layer and resin from the support. *Official Gazette* 627, No. 2, October, 1949, p. 480.

* LIGHT - SENSITIVE PIPERINE COMPOSITIONS. Alexander Murray. *United States Patent Number* 2,475,980 (April 15, 1946). This invention relates to a new light sensitive material of monomeric composition that is converted by light into a resinous polymer. The monomeric material is piperine to which an accelerator such as benzoyl peroxide can be added. *Official Gazette* 624, No. 2, July, 1949.

LITHOGRAPHIC PRINTING SURFACES. Ralph Stanley Colt. *British Journal of Photography* XCVI, No. 4661, September 16, 1949. A method of preparing lithographic printing plates by hydrolyzing the surface of cellulose acetate, sensitizing with a bichromate, treating the exposed layer with zinc cholide for positive to positive image, or with hypochlorite for a negative to positive image. The remaining hydrolized acetate forms the hydrophillic areas.

* SOMETHING NEW — SURFACE PLATE PROCESS. Anon. *National Lithographer* 57, Number 1, January, 1950, Page 42. (1 page). A new surface plate process was announced by the Charles F. Clerkin Company. Called the C.F.C. process, it uses a presensitized solution and a lacquer which is applied before exposure. It is claimed that the process is free from the usual albumin plate troubles.

PHOTO-MECHANICAL PRINTING SURFACES; BICHROMATED COLLOID PROCESSES. N. E. Funk. *British Patent No.* 597,720. Relief printing surfaces which are especially applicable for printing a number of similar multicolour impressions on a wide web of paper by the offset printing process are made from thin metal plates which are etched so as to cause the relief parts of the design to protrude to a great extent from the low parts so as to prevent ink being taken from the low parts. The metal plate is of zinc about .025 or .020 inches thick, and the etching may be carried to .0095 inch, but in any case not a half of the thickness of the plate. The plate is first cleaned by scrubbing with a solution consisting of 8 ozs. of 28 per cent acetic acid to a gallon of water. The plate is coated with a sensitive solution of (a) 3 oz. albumen, 1 gallon of water; (b) ammonium bichromate 1 oz., water 8 ozs.; (c) water solution of ammonia ½ oz., water 8 ozs. Each coated plate is exposed separately in register to a colour separated negative, using a 100-line screen, and its surface is rubbed with developing ink and developed in running water. The plate is then de-sensitized with a solution containing (a) ammonium bichromate 1 oz., water 4 ozs.; (b) phosphoric acid 85 per cent 1 oz., water 2 ozs.; (c) gum water 35 degrees on hydrometer, 18 ozs. The dried plate is coated with gum Arabic and powdered prior to etching to a depth of .003 inches. The plate is then painted out and powdered four ways and burnt in four times for a second and a third etching of similar extent. The plate is finally cleaned. *Abridgment of Specifications*, Group XX, Page 259, August 24, 1945.

PLANOGRAPHIC PRINTING PLATES. F. Lierg. *British Patent Applications* 13,595/39. (Germany, May 7, 1938.) A colloid layer consisting of a partially hydrolyzed cellulose ester, which may contain modifying agents is sensitized with either chromate or silver halide. Exposure tans the colloid which becomes ink-receptive. With silver halide, the tanning effect is not very marked and an alkaline modified bromoil bleacher is used to give improved ink-receptive qualities by depositing basic

METHOD FOR PRODUCING PRINTING PLATES. Esselte, A. B. *British Patent No. 631,858.* In depositing chromium on a thin sheet metal carrier, preferably zinc, for use as a bimetallic plate, it is necessary to use high current densities. The thin sheet metal is therefore clamped on to a thicker base of a metal with a higher specific conductivity than zinc (e.g., copper) and then chromium plated. This eliminates the harmful effect on the thin sheet metal of the excessive heat generation due to the high resistivity and high current density. *Photographic Abstracts* 5, No. 2, February, 1950, Page 90.

* OFFSET PLATE CARE — THE TECHNIQUE OF GUMMING AND RUBBING UP A PLATE EXPLAINED. Oscar Diehl. *Lithographers Journal* 34, No. 12, March, 1950, Pages 8 and 38 (2 pages). This is a summary of the various correcting techniques used on an offset plate during a run. Mr. Diehl emphasizes the need for overall cleanliness and development of a good gumming-up technique. He gives a detailed rub-up procedure together with several suggestions that make for good pressmanship.

NEW METHODS FOR THE PREPARATION OF PLANOGRAPHIC PLATES. G. Engel, *Druckgewerbe,* 1949, 2(24), (Dec. 16), 419-20 (2 pages) (In German.) The Ozasol negative plates (Kalle & Co.), designed for use on the R 30 Rotaprint, but also usable on ordinary offset machines, consists of cellulose acetate films in which the non-image areas are hydrophilic (i.e., attract water). The foils are rendered light-sensitive with a chrome-free soluble organic compound, which becomes insoluble on exposure to light. Owing to the thinness of the film the negatives are as sharp as positives. Details are given of the manipulation of the foils and also of the Ozasol positive foil which is an aluminum foil plate. *Photographic Abstracts* 5, No. 2, February, 1950, Page 89.

OXIDATION OF ZINC PLATES AND SOMETHING ABOUT GRAINING AND COUNTER-ETCHING. *I. G. T. Nieuws* 3, No. 1, September, 1949, Pages 4-7 (4 pages). The essentials of a good graining process, the prevention of oxidation during graining by the addition of dichromate, counter etching, heat-sensitive inks, and the tinting of offset plates by lead driers are discussed. *Printing Abstracts* 5, No. 3, March, 1950, Page 131.

METHOD OF TREATING ALUMINUM SURFACES. Ralph B. Mason. *Official Gazette* 634, No. 2, May 9, 1950, Page 600. *United States Patent Number 2,507,314.* The method of preparing an aluminum surface for use as a printing surface, which comprises treating the aluminum surface with a solution containing alkali metal fluoride and non-fluoride alkali metal salt until substantial reaction ceases, subjecting the treated surface to the action of acid to reactivate the same and thereafter repeating the fluoride and acid treatments in the sequence stated.

* A NEW CHROMIUM LONG-LIFE-LITHO PLATE. D. N. Adams. *National Lithographer* 57, No. 5, May, 1950, Pages 32, 33, 71, 73 & 79 (5 pages). This article describes a new deep etch lithographic plate which utilizes chromium in the non-image areas and a hydrophobic organic material in the work areas. This type of plate can be made by conventional methods using proprietary

lacquers. However best results were found to be obtained with a lacquer formulation combining an acrylic ester resin and vinylite resin. This lacquer is topped with an asphaltum preparation and a developing ink. The author claims that plates of this type should give up to 500,000 impressions under average conditions.

*MISCELLANEOUS CAUSES OF PLATE TROUBLES. Oscar Diehl. *Lithographers Journal* 35, No. 2, May, 1950, Pages 8 & 46 (2 pages). Nine factors that can give plate troubles are: (1) too much pressure between plate and blanket; (2) excess acid in fountain solution; (3) short inks; (4) dirty dampeners; (5) hard, slick or embossed blankets; (6) heat; (7) paper; (8) rollers that are set too tightly or too loosely; (9) sour gum or acid that has been standing for a long time should never be used. Removal and prevention of the above factors will greatly reduce trouble during a run on the press.

*CHROMIUM ETCHING FOR POLY-METALLIC PLATES. *Modern Lithography* 18, No. 5, May, 1950, Pages 54 & 57 (2 pages). The Lithographic Technical Foundation has developed a non-fuming etch to be used on poly-metallic plates. Exposure and counter-etching must be handled carefully to control tone and "activate" the chromium properly. Two methods of applying the etch, the thin-film technique and the immersion method, are described. Etching time varies from plate to plate depending on thickness of the chromium coating. Laboratory experience indicates that bi-metal plate processing is largely a matter of individual preference and skill. The suggested techniques have worked well in the laboratory and in the plant.

IMPROVEMENTS IN ROTARY OFFSET PRINTING. Harris-Seybold Company. *British Patent Number 633,516.* An increase or decrease in the angular speed of one of two co-acting cylinders is produced, during that portion of the cycle when the cylinders are in printing relation, in an amount dependent upon the length of the print to be produced. Subsequently, in that portion of the same press cycle when the cylinders are not in printing relation, an opposite change is effected, i. e., a decrease or increase in angular speed of the same cylinder to bring the two cylinders into a given relation prior to the start of the next cycle. Modifications are described. *Tin-Printer and Box Maker* 26, No. 304, May, 1950, Page 12.

PRINTING-SURFACES. C. Batcheller. *British Patent Number 593,287.* A grained surface is formed on a lithographic printing plate made of chromium—containing alloy steel, by electrolytic etching, prior to forming a printing image thereon. The alloy may contain chromium in substantial quantities, say over 5 per cent. or 6 per cent. by weight, and preferably contains 18 per cent. of chromium and 8 per cent of nickel. Stainless steel with a bright, cold rolled finish having an oxide surface a good proportion of which is left intact by the etching, may be used: the steel may be in strip form of paper-thin gauges. e.g., 0.0095 in. The electrolytic etching may follow a mechanical treatment using a liquid sludge of fine abrasive grit forced against the surface from a nozzle. A coloured oxide coating may be produced on the grained plate prior to forming the printing-image, by immersing the plate in the etching-bath without the use of current. *Abridgement of Specifications*, Group XVI, Page 93.

PHOTO-MECHANICAL PRINTING PLATES. A. G. Akomfina. *British Patent Number 626,844.* A light metal plate (e.g. an aluminum, aluminum alloy or magnesium plate) is immersed in lye, a light-sensitive layer applied, exposed through a diapositive, developed, the plate coated with an alcoholic solution containing at least one metal salt which reacts with the bare metal of the plate so as to form a firmly adhering metallic layer, and, finally, the hardened colloid

removed. Where a heavier metal such as zinc or copper is used as the base metal, the metal solution may be aqueous or alcoholic. *Printing Abstracts* 4, No. 11, November, 1949, Page 559.

* HOW TO LICK SUMMER PLATE TROUBLES. *Modern Lithography* 18, No. 6, June 1950, Pages 31-32 & 109 (3 pages). Measurement, effects and control of relative humidity in the plate department is necessary knowledge which will aid in trouble free plates during humid summer weather. Relative humidity must be measured as close as possible to where the plate is being made. A slight change in atmospheric temperature causes a pronounced change in relative humidity. Some of the things affected by high R.H. are; (1) light sensitivity of coating, (2) coating thickness, (3) staling rate (both dark and continuing reactions), (4) hardness or durability of an albumin image, and (5) rate of surface oxidation on a plate.

* SOME FACTORS IN BI-METAL LITHOGRAPHY. Marvin C. Rogers. *Modern Lithography* 18, No. 6. June 1950, Pages 45-48 (4 pages). This article reviews the properties and structure of contemporary bi-metallic plates. A tabulated description is given of metals used in the Boekleman and Elfers, Ahlen and Akerlund, Housleiter, Coates, I. P. L, Aller, Lithure, and Blau bimetal plates. And mention is made of the use of contact angle measurements and press tests for the selection of metal combinations. The effect of the etch factor is described and a tone reproduction comparison is made of a positive of a particular subject and its corresponding copper—stainless steel, chromium—copper (Etched), chromium—copper (Plated), and Zinc Deep Etch plate.

* THE "WUTO" OFFSET PLATE STRETCHING DEVICE. Otto Wuschig. *Polygraph* 3, No. 5, March 5, 1950, Page 166 (In German). This device for stretching plates so as to compensate for differences in register is illustrated. *Printing Abstracts* 5, No. 5, May 1950, Page 228.

DESENSITISATION AND CHROMATE LAYERS. *Tete* 5, No. 1, September 1949, Pages 14-17 (4 pages). The basic changes that take place during the oxidation of zinc and aluminum plates are described. The Cronak and Brunak methods are discussed. *Printing Abstracts* 5, No. 5, May 1950, Page 231.

Deep etch plates

* DEEP-ETCH PLATE COATINGS. C. B. Miesse, Jr. *Modern Lithographer and Offset Printer* 45, No. 6, June, 1949, pp. 102-106 (5 pages). Variations in composition and viscosity of gum arabic solutions led to an ion-exchange method for the production of arabic acid. Rohm and Haas IR-100 ion-exchange resin is used. This removes the calcium and magnesium ions from the gum and replaces them with hydrogen ions, forming free arabic acid. The resulting solution has a lower viscosity and a more constant viscosity-solids ratio. The process is in commercial production at the Harris-Seybold Co. Details of the ion exchange column are given in this article. It is claimed that deep-etch coating solutions made from the purified arabic acid are more uniform, give better reproduction, and give a tougher tanned stencil. The pH of pure arabic acid is about 2.0, compared with about 4.5 for the original gum solution.

* DEEP ETCH DURING DOG DAYS. Joseph H. Winterburg. *National Lithographer* 56, No. 7, July, 1949, pp. 26-27, 83-4 (4 pages). In the summer the counter-etch can be weakened as the heat makes it more active. The whirler should be slowed to compensate for decreased viscosity of the warmer coating solution. A longer drying time is needed, and then a shorter exposure time. Some

people wax their plates to prevent absorption of moisture during exposure. The plate can be warmed before development to drive excess moisture out of the coating. Deep-etching time should be shortened, as the etch is more active when warm. It is wise to adjust etching time to the relative image area on the plate. Avoid too deep an etch during deep-etching. Care must be exercised in the alcohol washes to remove all chemicals from the plate. In summer it is safer to stage out after development of the plate to prevent oxidation of the zinc in the image areas.

• WATCH VISCOSITY OF COATING IN PREPARING DEEP-ETCH PLATES. *Printing Magazine* 74, No. 2, February, 1950, Pages 69, 72 (2 pages). It is suggested by Lithographic Technical Foundation that the thickness of coating on a standard deep-etch plate is just as much a function of the viscosity of the solution as the Baumé. The essential differences between viscosity and Baumé are pointed out in the article. Baumé is concerned with specific gravity or the amount of solid material that is in solution. Viscosity is the term used to describe a solution's ability to flow. Lithographic Technical Foundation research has found that control of viscosity is especially important in deep-etch coatings because of the wide variations in different lots of gum arabic. A method is described for using a 10 ml pipette for making actual measurements of viscosity.

Bimetallic plates

• FACILITIES FOR PROCESSING THE ALLER PLATE. *British and Colonial Printer* 145, No. 1082, July 29, 1949, p. 101 (1 page). Five methods for the making of bimetallic plates by the Aller process are shown diagrammatically. Two of these processes involve post-plating (after image is developed) and three involve pre-plating. Four of the processes use stainless steel as a base, while the fifth uses iron, brass or copper. Four of the processes employ a positive, while the fifth uses a negative.

•OBSERVATIONS ON THE COATES' BI-METAL PLATE. W. Willerton. *Lithographer*, 1949, 1(10), 214 (Dec.). The use of the Coates' plate for tin-printing is discussed. Great care must be taken with the adjustment of rollers and damping. The film of ink should be as thin as possible: Gumming up when the machine is standing is recommended. *Photographic Abstracts* 5, No. 2, February, 1950, Page 90.

PAPER BASE PLANOGRAPHIC PRINTING PLATES. S. D. Warren Company. *British Patent Number 633,746.* The paper base is coated with a hydrophilic, planographic, image-receptive surface (e.g. casein or sodium alginate) which contains a water-soluble, water-stable bivalent metal salt (e.g. zinc acetate) which increases the resistance of the printing surface to penetration by grease and water without interfering with its wettability by these materials. *Printing Abstracts* 5, No. 4, April, 1950. Page 177.

PAPER BASE PLANOGRAPHIC PLATES. S. D. Warren and S. V. Worthen. *British Patent Number 633,796.* The withdrawal of water from the damping film by the paper is avoided, even with the application of a coating to one side only of the paper base, by the addition of a definite proportion of water-stable divalent metal salt to the hydrophilic adhesive of the coating (e.g. 5 to 200 parts of a divalent metal salt such as an ammoniacal solution of cupric chloride to 10 to 50 parts of a hydrophilic adhesive such as casein or glue and 100 parts of an inert filler such as clay or blanc fixe.) *Printing Abstracts* 5, No. 4, April, 1950, Page 177.

Plate desensitization

*A PLATE TREATMENT AFTER DEVELOPMENT WHICH IMPROVES DESENSITIZATION. LTF *Research Progress* 1, No. 13, May–June, 1949, pp. 3–4 (2 pages); *Lithographers Journal* 34, No. 5, August, 1949, pp. 14, 35 (2 pages). Tests indicate the use of Cronak after development of the zinc plate (post-Cronaking) not only gives improved desensitization by removing the residual albumin film, but leaves a Cronak surface, lithographically superior to bare zinc, on the non-printing areas. The post-Brunak treatment gives similar results on aluminum. Formulas are given for the Cronak and Sodium Cronak solutions for zinc and for the Brunak solution for aluminum. Procedures are recommended by the Lithographic Technical Foundation for producing the best desensitization of zinc and aluminum surface coated plates. Both the pre-Cronak and post-Cronak treatments for zinc are recommended. For

*METHOD OF DESENSITIZING COPPER ON ALLER PLATE. Charles F. King. *Inland Printer* 124, No. 5, February, 1950, Page 42 (1 page.) The author refers to the Lithographic Technical Foundation method of desensitizing unwanted printing areas on bimetallic plates of the copper-chromium type. The fact that this desensitization is claimed to last only 15,000 to 20,000 impressions leaves something to be desired. The Aller plate is not subject to this difficulty. Since the printing areas are copper on top of stainless steel, they can be removed permanently with nitric acid. Work can be added by replating a film of copper in the desired areas and making set-ins.

Plate grain

*THE CARLSON-EPPLER MACHINE FOR VAPOR BLAST GRAINING. E. G. Carlson. *Modern Lithography* 17, No. 7, July, 1949, pp. 52, 55 (2 pages); *National Lithographer* 56, No. 7, July, 1949, pp. 40, 79–80 (3 pages). A description is given of the Vapor Blast machine developed jointly by E. G. Carlson of Western Printing and Lithographing Company and the Vapor Blast Manufacturing Company of Milwaukee. The machine will accommodate plates up to 58 x 76¾". The plate is strapped to a cylindrical drum. The gun which sprays the wet abrasive travels from side to side. Air pressure is used to spray the abrasive onto the plate. The machine is in production for graining new and old zinc plates. The plates hold moisture well, and are used regularly at Western for press runs. Deep-etch plates require a total time of 19 minutes for regraining. Albumin and new plates require only 9½ minutes.

*PROBLEMS OF GRAINING PLATES. Charles F. King. *Inland Printer*. 125, No. 3, June 1950, Pages 57-59 (3 pages). Numerous problems encountered in lithographic printing can be traced back to a faulty grain on the plate. Variations in grain can be responsible for differences in coating thickness, coating spots, scumming or blinding of the plate on the press. No reliable means of measuring or specifying a grain exists and it is still unknown just what properties of grain are needed for best performance. Some of the variables involved in graining are marbles (steel, wood, glass, or porcelain), marble size, type of abrasive, abrasive size, chemicals used in grainer, pretreatments of the plate, etc. Mr. King recommends that further research on this subject of grain be undertaken.

Offset presses

*HOW TO TAKE CARE OF YOUR PRESS. *Modern Lithography* 17, No. 7, July, 1949, pp. 34-35, 93 (3 pages). Cleanliness, proper lubrication, and periodic inspection are the three "musts" in press care. A program is outlined for the proper care of inking rollers, ink

fountain, water fountain, registering mechanism, roller or tape table, vacuum system, delivery grippers, cylinders, and other parts of the press.

* OFFSET PRESS TROUBLES. Harry J. Damme. *Modern Lithography* 17, No. 9, September, 1949, pp. 30–32, 93 (4 pages). Press troubles are usually classified in the following groups: scumming or tinting, printing trouble (from satisfactory plates), paper troubles, register troubles, and streaking. These troubles may be caused by the need of finer mechanical adjustments in the inking unit, the dampening unit, the plate or blanket cylinders, or the feeder unit. They may also be caused by improperly prepared plates, physical properties of the paper being used, or by the formulation of the ink. Suggestions are given for the possible prevention or correction of the various press troubles.

* HANDLING OVERSIZE SHEETS ON OFFSET PRESSES. Anon. *American Pressman* 59, No. 12, November, 1949. Pages 30–31. While oversized sheets should not be printed on an offset press, occasions arise where the pressman is forced to do so. Special care in cleaning the press is necessary, especially on the ends of the rollers, cylinders, etc. Method of obtaining register is given for oversize sheets. The cause and remedy for tail and curl is given for the oversize sheets. Enough space should be allowed for trimming the star and skeleton wheel marks.

* NEW CRAWFORD PRESS COMBINES PRINTING PROCESSES. *American Ink Maker* 28, No. 3, March, 1950, Page 49. (1 page). A new rotary high speed web press is being produced by Crawford Engineering Inc., Providence, R..I. The press is adaptable for offset gravure, and letterpress printing from rubber plates. In offset gravure, a uniformly etched fine screen cylinder revolves in the ink reservoir. A doctor blade removes the excess ink. A composition offset cylinder transfers ink from the etched cylinder to the paper. Etching is about one fourth of the depth of conventional gravure plates. In rubber plate printing the offset cylinder is replaced with a cylinder carrying rubber plates.

* THE ABC OF OFFSET. George Jos, Lenzer. *Printing Equipment Engineer* 79, No. 6, March, 1950, Pages 38 & 39 (2 pages). Part II. Type for use in offset reproduction must have certain qualities. It must be clean, printed with a dull ink, on a dull-coated blue white stock. Furthermore care must be exercised to keep copy clean. Proofreading is of utmost importance. Several methods of producing type copy for offset are described, such as typewritten, fototype, transparent proofs, and by means of the recently developed Phototypesetting method.

Lithographic papers—general

• A NEW PRINCIPLE IN LITHOGRAPHIC PAPER MANUFACTURING. F. H. Frost. *Modern Lithography* 17, No. 7, July, 1949, pp. 59–62 (4 pages). This article discusses the theories and experiments involved in the development of a paper that is absorbent to ink and non-absorbent to water. This paper gives exceptionally high quality of reproduction, minimizes offsetting, requires only the same amount or slightly less fountain solution than a standard uncoated offset paper, eliminates delivery end curl, and uses only the normal or less than normal amount of ink. A double coating procedure is used to produce this paper.

• PERVERSE BEHAVIOR OF PAPER. Charles F. King. *Inland Printer* 123, No. 4, July, 1949, pp. 51–53 (3 pages). The lack of adequate tests for determining the actual printability of a paper is discussed. The most important property required of an offset paper, whether it is coated, supercalendered, or machine finished, is the ability to cleanly and uniformly transfer ink from the blanket. In multicolor dry printing, or if the sheet is to be varnished or lacquered, the essential property is enough strength in the sheet to make possible the use of ink with enough tack to transfer cleanly. For single color work, where no gloss coat is to be applied, the sheet would not be required to have the strength and pick-resistance now incorporated in litho stocks, but should have the ability to remove ink from the blanket quickly by absorption. Satisfactory means are needed of testing stock for strength, for ink absorption, for the uniformity of these properties, and for the chemical stability of the paper in relation to fountain water.

• PAPER FOR WEB OFFSET PRINTING. Milton Zucker. *Inland Printer* 123, No. 6, September, 1949, pp. 398–399. Most common barriers to progress in Web Offset printing have been eliminated due to speeded up presses, improved inks and plates. The problems remaining are the acquisition of good pressmen and suitable paper. In this article the author also discusses the problem of "piling."

• ATMOSPHERIC HUMIDITY. *Share Your Knowledge Review* 30, No. 12, September, 1949, pp. 21–24. The problems in handling paper are discussed with regard to dimensionally unstable paper, static troubles, uneven moisture in paper and extreme dryness. Remedies for these troubles are recommended. Adequate air conditioning is considered to be the most nearly ideal solution for paper problems.

Translated from 'Climat et Papier' from 'Les Feuillets Kupferschmid' by kind permission of the publisher: Louis Kupferschmid, Dornacherstrasse 97-101, Bale.

WATER-BORNE ALUMINUM COATINGS ON PAPER. Stanley J. Johnson, *Official Gazette* 629, No. 2, December 13, 1949, P. 482. A paper coating composition comprising finely divided aluminum, casein, urea, sodium phyrophosphate and dimethylolurea in an amount by weight of from 5 to 20% of the weight of casein. *United States Patent No. 2,491,113.*

ELIMINATOR FOR STATIC ELECTRIC CHARGES. *Research Association and British Rubber Manufacture, Summary of Current Literature. British Patent Number,* 618,577. Static charges are particularly liable to build up on a printing machine where a moving web contacts a rubber blanket. To eliminate this charge the web is brought at one point into contact with a surface which is uncharged but will impart a charge of predetermined polarity to the web contact between the web and surface, the web being thereafter brought into contact with another surface which is un-

charged but will impart a charge of opposite polarity to that imparted by the first surface of the web. The second charge will thereby neutralize the first charge. *Printing Abstracts* 4, No. 8, August, 1949, p. 401.

* STATIC. Robert F. Reed. *Modern Lithography* 17, No. 10, October, 1949. Static electricity can cause erratic misregister that is sometimes blamed on the press feeder and register mechanisms. The causes of static and conditions which aggravate it are discussed. Methods of static elimination includes: humidification, and the use of gas flames, grounding devices, high tension electric neutralizers, and radioactive ionizers.

* PAPER STRETCH. *American Pressman* 59, No. 11, October, 1949. A discussion of the causes and methods of compensation for various types of paper stretch encountered in the lithographic shop. Methods for printing longer or shorter, by changing packaging of the blanket and plate are described, as well as correction for wavy or tight edged sheets. To correct for bearer to bearer stretch, the plate must be removed and cut into strips which are re-set for correct register; otherwise the plate must be remade. Many of the stretch problems could be eliminated by proper preconditioning of the paper.

* MACHINE COATING—ITS PLACE AND FUTURE. B. R. Newcomb. *Southern Pulp and Paper Manufacturer* 12, No. 10A, October, 1949, P. 34. In 1938, there were 4 methods for machine coating paper: (1) the ink printer method, (2) the roll coating and doctor method, (3) the rotogravure offset method, and (4) the squeeze roll method. More modern methods allow the application of coatings with higher solids content and improve the quality of coating. The air blade coater and knife diaphragm coater are examples of new methods. New uses for coated papers are developing, such as coated newsprint. New types of coated papers will require machine coating, thus robbing the off-the-machine converter of some of his business. However, the latter will find additional fields for his talents.

* HOW PAPER EFFECTS PRESS EFFICIENCY. A. B. Woodruff. *American Printer* 129, No. 4, October, 1949, P 46. A number of factors affect the ease with which a press can handle the paper. They are as follows: the characteristics of paper, the importance in the thickness of the stock, conditions of the stock, the speed of the press and the conditions in the pressroom.

GLOSS MEASUREMENT OF PAPERS: A COMPARATIVE STUDY. V. G. W. Harrison. *Journal of Scientific Instruments* 26, 84-90 (7 Pages), March, 1949. The performance of the Bausch and Lomb and Sheen glossmeters is examined. Comparison of gradings of nine printing papers according to visual and instrumental means shows that, despite high correlation between them, there are nevertheless important discrepancies not attributable to sampling, instrumental or personal errors. The effect of angle of incidence and viewing on grading is investigated; best results are noted at 45°, and the discrepancies become more pronounced at greater angles. Gradings of the same papers according to the Jones, Askania, Goerz, Ostwald and Klughardt methods are examined; all are found unsatisfactory. It is concluded that, for the limited range of papers tested, the most satisfactory grading is given by measurements of the intensity of light received when angles of incidence and viewing are 45°. *Photographic Abstracts* XXIX, Part 4, No. 116, Page 239.

* WETTABILITY OF PAPER SURFACES BY WATER AND THE SURFACE ABSORPTION OF WATER BY PAPER. George D. Knight. *Tappi* 33, No.

2, February, 1950, Pages 59-66 (8 pages). An apparatus which will reveal irregularities in the surface wettability of a sheet of paper was constructed, and a technique for its operation was devised. Surface patterns produced on several papers were visually compared and the quantities and depths of penetration of dye solutions in the surface layers were calculated by means of an extension of the Kubelka-Munk relationships. The results did not correlate with standard physical paper tests. The surface wettability of paper was found to be extremely sensitive to practically any type of treatment. Results are of value in tub sizing, coating, gumming, or other converting operations concerned with the application of aqueous materials to paper, including printing with aqueous inks. The procedures may also be found to extend to solvent wettability of paper and, hence, to the fields of oil ink printing, lacquering, varnishing, and practically any operation dealing with application of fluids to paper.

* PAPER TROUBLES IN OFFSET LITHOGRAPHY. Robert F. Reed. *Paper Trade Journal* 130, No. 12, March 23, 1950, Pages 36-38 (3 pages). This article, after a brief review of the history of lithography, describes in detail the qualities of paper necessary for good offset lithography, i.e., flatness (uniform moisture content), surface and internal bond strength, moisture resistance and freedom from chemical effect. It includes explanations and corrective measures for printing difficulties (curling troubles, static electricity, slow ink drying) caused by unfavorable humidity conditions.

* DRIED-IN STRAINS IN PAPER SHEETS AND THEIR RELATION TO CURLING, COCKLING AND OTHER PHENOMENA. S. F. Smith. *Paper Maker* 119, No. 3, March, 1950, Pages 185-188 and 190-192 (7 pages). A study of causes of curl in coated and lined boards. Curl is caused by shrinkage when dried-in stresses are relieved by moistening and the sheet re-dried. Cockling is caused by non-uniform shrinkage of the sheet as it dries, due to non-uniform dried-in strains.

* RESIN BONDING OF HARDWOOD FIBERS IN OFFSET PAPERS. *Technical News Bulletin* 34, No. 3, March, 1950, Pages 42-44 (3 pages). Satisfactory printing papers were produced with furnishes containing 75% hardwood pulp using melamine-formaldehyde resin to give bond strength.

* THE ROLE OF METALLIC SOAPS IN FILM FORMATION. R. F. Bowles. *Journal of the Oil & Colour Chemists' Association* 33, No. 356, February, 1950, Pages 97-113 (17 pages). Experiments are described that indicate (1) the rapid and strong absorption of metallic naphthenates at all interfaces; (2) that naphthenates of some metals act as flocculating agents and others as deflocculating agents; and (3) that zinc, lead and calcium soaps assist film formation in the presence of cobalt by promoting flocculation.

* INK BEHAVIOR. *American Ink Maker* 18, No. 4, April, 1950, Page 31. A brief account of the discussion of ink behavior on roller systems at the National Printing Ink Research Institute, February 24, 1950.

* ROLLER - TYPE APPLICATOR FINENESS OF GRIND GAGE. I. M. Bernstein. *Industrial and Engineering Chemistry* 42, No. 5, May, 1950, Pages 908-16 (9 pages). The roller-type applicator fineness of grind gage is described and an account given of the theory underlying its use in the quantitative evaluation of pigment dispersion. This paper also presents a study of its application to 3-roll milling of a group of representative pigments dispersed in heat-bodied linseed oil. The formation of secondary aggregates, termed impactoids, during the milling operation and of their subsequent dispersion can

be followed by the gage method. Based on the data obtained, a mathematical expression for 3-roll milling was derived.

* WRINKLES ON OFFSET PRESSES. *American Pressman* 60, No. 5, April, 1950, Pages 56 & 57 (2 pages). Wrinkles in stock can be eliminated by pressmen in several ways. When a wrinkle is caused by wavy stock the blanket packing can be cut with V-shaped slots which will stop wrinkling. Wrinkles can be caused by grippers out of square, paper jamming cylinder stops, paper not entering grippers flat, or excess moisture on paper. How to eliminate these wrinkles is described briefly.

* MORE ABOUT ABSORPTIVITY OF PAPER. Charles F. King. *Inland Printer* 125, No. 1, April, 1950, Pages 43-45 (3 pages). A discussion of the roles of ink and water absorbency and wettability of paper in offset printing. The author cites evidence to indicate that wettability of the paper surface is more important than its absorbency.

* THEORY OF THE PRINTING OF LITHOGRAPHIC INKS. Part two: Greasing and Theory. Dr. Everett Carman. *Modern Lithography* 18, No. 4, April, 1950, Pages 45-48 (4 pages). In part two the author states that greasing tendency of an ink is a function of the wetting properties of both pigment and vehicle. He describes the effects of each, and by tables and diagrams shows that non-greasing inks should contain combinations of (1) hydrophobic pigment and hydrophobic vehicle, or (2) hydrophilic pigment and hydrophilic vehicle, or (3) hydrophilic pigment and hydrophobic vehicle. The combination of a hydrophobic pigment with a hydrophilic vehicle causes greasing.

MEANS FOR AND METHOD OF OFFSET PRINTING. C. B. Cottrell & Sons Co. and H. J. Luehrs. *Official Gazette* 632, No. 1, March 7, 1950, Page 229. *United States Patent No. 2,499,870.* A web offset rotary printing press has an offset cylinder, a dampening cylinder having raised moisture carrying surfaces for applying moisture directly to the offset cylinder, a printing cylinder having raised ink carrying surfaces, and an inking cylinder for applying ink thereto. The raised moisture and ink carrying surfaces are so positioned as to produce a continuous film on the offset cylinder consisting of separate moistened and inked areas to be transferred thereby to the web. *Printing Abstracts* 5, No. 5, May 1950, Page 217.

* PRE-TESTING PAPER FOR INK ABSORPTION. Leo Cahn. *American Ink Maker* 28, No. 5, May, 1950, Pages 41 & 63 (2 pages). Density measurements of the K & N stain test for ink absorption is suggested as an evaluation method having improvements over visual evaluation. A medium stain of between .15 and .28 density usually gives good press results. It was noticed that the hue of the stain changed with the pH of the coating and with time beyond two hours. The use of the stain to check spottily sized coatings which will print mottle is also suggested.

GLOSS MEASUREMENTS OF PAPERS: A COMPARATIVE STUDY. V. C. W. Harrison. *J. Science Instruments* 26, 84-90, March, 1949. The performance of the Bausch and Lomb, and Sheen glossmeters is examined. Comparison of gradings of nine printing papers according to visual and instrumental means shows that, despite high correlation between them, there are nevertheless important discrepancies not attributable to sampling, instrumental, or personal errors. The effect of angle of incidence and viewing on grading is investigated and the discrepancies were found to become more pronounced at greater angles. It is concluded that for the limited range of paper tested, the most satisfactory grading is given by measurement of

the intensity of light received when angles of incidence and viewing are 45 degrees. *Monthly Abstract Bulletin* 35, Number 11, November, 1949, Page 415.

* IS IT ALWAYS THE PAPER? Michael H. Bruno. *Paper Trade Journal* 130, No. 24, June 1950, Pages 98, 100 & 102 (3 pages). A brief review of lithography is given. Since lithography uses water and the offset transfer principle, many demands are made on the quality of paper and ink used. The three troubles connected with the increasing use of coated stock which are blamed on the paper are slur, embossing and moisture absorption, each of which is described separately. Also described are two problems on uncoated stock; wandering spots, and offset of ink when sheets are handled in finishing.

MEANS FOR OFFSET PRINTING. C. B. Cottrell & Sons Co. and H. J. Luehrs. *Official Gazette* 632, No. 1, March 7, 1950, Page 229. *United States Patent No. 2,499,871.* A multicolour web perfecting offset rotary printing press has two coacting offset cylinders, means for passing the web therebetween, dampening cylinders having raised moisture carrying surfaces for applying moisture directly to the offset cylinders, a number of colour printing cylinders arranged around each of the offset cylinders, the colour printing cylinders having raised ink carrying surfaces, and means for applying ink thereto for successive transfer to their respective offset cylinders, the circumference of the offset cylinders being a multiple of the circumference of the dampening cylinders and of the inking cylinders, the raised moisture and ink carrying surfaces being positioned to produce continuous films on the offset cylinders consisting of separate moistened and inked areas to be transferred simultaneously to both sides of the web.

Paper materials

* RESIN BONDING OF HARDWOOD FIBRES IN OFFSET PAPERS. *Paper Maker and British Paper Trade Journal* 119, No. 5, May, 1950, Pages 334-35 (2 pages). This article explains how the use of synthetic resins is improving the quality of hardwood papers for printing. Melamine-formaldehyde substitutes for the natural adhesive bond in softwood pulps and gives the strength that was formerly missing. This investigation indicates that, by using resin bonding in printing papers, pulp from the large number of hardwood which are available can be used much more extensively than in the past, thereby cutting down the use of softwood pulp, which is steadily decreasing.

THE STRUCTURE OF PAPER. D. Tollenaar and G. Blokhuis. *Appli. Sci. Res.* A2, No. 2, 1950, Pages 125-41 (17 pages). The flow of liquid in porous material can be described in the first instance by means of two constants: the mean pore radius r and the pore density N. To determine these two constants two mutually independent equations are needed, such as the equation of Lucas-Washburn for the height of rise, that of Poiseuille for the rate of flow, that for the capillary volume, etc. This structure description is inadequate: (a) to explain the strike-through, (b) to explain the height of rise when the capillary pressure and the hydrostatic pressure are in equilibrium, and (c) to calculate the weight of liquid risen. A new structure description with more constants, assuming a size distribution of the pore radii, presents the possibility of overcoming these difficulties. The distribution according to Gauss involves three constants: the most frequent pore radius r_o, a density factor n_o, and a factor x, determining the standard deviation of r_o. The strike-through is explained by the difference in capillary pressure between narrow and wide capillaries, as a

result of which the liquid present in the wide pores is forced into the narrow ones. For rotary printing it is desirable to use a paper with a flat distribution curve. *Printing Abstracts* 5, No. 5, May 1950, Page 212.

Coated and calendered papers

* HYDROXY ETHYL CELLULOSE IN PAPER COATING. D. Robert Erickson. *TAPPI* 32, No. 7, July, 1949, pp. 289-291 (3 pages). A new coating process which involves the use of a hydroxy alkyl ether of cellulose as a binder is described. These ethers are selectively soluble in a critical concentration of sodium hydroxide and can be set by ion exchange wherein the sodium ion is replaced. The action is immediate to give a non-tacky coating. It is claimed that a coating prepared with this material can be applied to a sheet by the conventional coating processes used on the paper machine.

* POSTWAR DEVELOPMENTS IN LITHO COATED PAPERS. A. P. Reynolds. *Modern Lithography* 17, No. 8, August, 1949, pp. 63-65 (3 pages). The early history of coated papers and their limitations are discussed briefly. Coated-two-side offset papers have been recently developed that are made with coating pigments which, since they have a quick affinity for ink vehicle, hold the color up, allow the vehicle to flow swiftly between them, and greatly minimize the risk of offsetting at high speeds. The judicious use of latex, starch and casein as coating adhesives, is reflected in the better quality of today's coated-one-side label papers. Improved spirit varnishes are also among the other postwar developments. Papers incorporating these new developments show more uniformity of performance, better physical performance, and permit quicker successive printings.

* AGING OF STYRENE-BUTADIENE LATEX MODIFIED STARCH-CLAY COATINGS. E. K. Stilbert, R. D. Visger, and R. H. Lalk. *Tappi* 33, Number 1, January, 1950, Pages 16-22 (7 pages). Mineral pigment coated papers were prepared in the laboratory with the type of adhesive as the principal variable and the pigment blend as a secondary variable. Clay and a blend of clay and calcium carbonate were used with starch and starch blended with Dow Latex 512K, a styrenebutadiene copolymer, to study the effect of normal aging on the properties of the coated papers. During a period of 15 months of normal aging the brightness and ink receptivity of the papers changed at the same rate in all cases. Both the wax pick and the wet rub resistance of the coated papers containing the latex increased with aging; the greatest increase being obtained with the highest proportion of the copolymer. The flexibility of the coated papers and the retention of flexibility with aging increased directly in proportion to the increase in the proportion of the latex in the adhesive. These results were found to be comparative to the effect of normal aging on commercially prepared coated papers containing the copolymer.

* PRODUCTION ON COATED OFFSET PAPER. *American Pressman* 60, No. 6, May, 1950, Pages 47-48 (2 pages). In switching from uncoated offset paper to coated stock, in the case of the 60 or 70 lb. weights in general magazine use, it was found by many pressman and production executives that production dropped from 10% to 30%. The reason is given that offset coated stock, of the same base weight as uncoated offset or coated letterpress stock, sometimes feels "extremely thin and flimsy." Also, coated offset papers are inclined to curl, wave and buckle, and stick together where excess moisture has contacted a sheet. In addition, parts of the coating seem to form a scale on the blanket, which must be cleaned.

PAPER COATING COMPOSITION AND COATED PAPER. H.C.N. Heckel and Champion Paper & Fibre Company. *Official Gazette* 631, No. 3, February 21, 1950, Page 772. *United States Patent No. 2,498,207.* Coated paper having substantially the same printing qualities as casein coated paper which consists of a paper base carrying a coating deposited from an aqueous composition comprising 100 parts of mineral pigment by dry weight and 8 to 30 parts of an adhesive comprising oxidized cellulose dissolved in alkali. The oxidized cellulose is prepared by treating cellulose with nitrogen peroxide to give a carboxyl content of 7 to 16%. The aqueous composition has a solids content of about 50%. *Printing Abstracts* 5, No. 5, May 1950, Page 207.

Paper conditioning

* PROBLEMS OF CONDITIONING PAPER. Charles F. King. *Inland Printer* 125, No. 2, May, 1950, Pages 41-44 (4 pages). In general an article deploring the lack of knowledge about paper conditioning problems and their solution. Terms such as humidity, relative humidity, absolute humidity, dew point and hygrometer are defined to make the balance of the article more easily understood. In closing Mr. King writes that the problem is far from solved, and suggests projects for research, which might aid in the solution of paper conditioning problems.

Paper testing

* PRE-TESTING PAPER FOR INK ABSORPTION. Leo Cahn. *American Ink Maker* 28, No. 5, May, 1950, Pages 41 & 63 (2 pages). Density measurements of the K & N stain test for ink absorption is suggested as an evaluation method having improvements over visual evaluation. A medium stain of between .15 and .28 density usually gives good press results. It was noticed that the hue of the stain changed with the pH of the coating and with time beyond two hours. The use of the stain to check spottily sized coatings which will print mottle is also suggested.

* A NEW COATING THICKNESS MEASURING INSTRUMENT. *Metal Finishing* 48, No. 5, May, 1950, Pages 64-66 (3 pages). An instrument for measuring thickness of non-magnetic coatings on steel by magnetic methods is described. This instrument has the advantages that it is energized by standard 110 volt A. C. lighting circuit power, is relatively insensitive to normal voltage variations in the power source, and provides a means for accurate, yet rapid measurement.

Lithographic inks—general

* AMINE ADDITIVES TO PREVENT DRYING LOSS ON AGING. A. C. Zettlemoyer and Donald M. Nace. Paper Presented at *Division of Paint, Varnish and Plastics Chemistry* Meeting September, 1949, pp. 145-152 (8 pages). Fifty-five nitrogen-containing compounds, mostly amines, were tested in inks containing a yellow alumina hydrate lake to determine which ones were effective in preventing drying loss of the ink upon aging. The effect of the amount of additive, the amount of cobalt drier present, and the ratio between the two was studied. The compound 2, 4, 6-tri-(dimethylaminomethyl) phenol (trade name DMP-30) was found to reduce loss of drying on aging better than any other additive tested. Used in amounts of 1-2%, DMP-30 greatly reduced the loss in drying on aging of inks containing Tartrazine Yellow Lake, Peacock Blue, Persian Orange and other yellow lakes. It apparently coordinates with the cobalt in the drier, stabilizing the cobaltic state, and this complex is not readily absorbed by lake pigments.

*** DRYING OF PRINTING INKS. Everett Carman. *American Ink Maker* 27, No. 7, July, 1949, pp. 35–6 (2 pages). Inks which dry by oxidation and polymerization are discussed in this article. Table is given comparing times for initial set, chalk stage and complete drying of oxidizing type inks on coated, supercalendered, and machine finish papers. The "carbonization" method of testing the drying of printing inks is described.**

COLOURED PRINTING INKS, ALSO SPRAY! G. Dorband. *Druckgewerbe*, 1949, 2 (6), 92-3 (Mar. 16) (In German). In contrast to the statements made in Druckgewerbe, 1948, 1 (22), 313-5 (Aug.) Printing Abstr. 1948, 3 (10), 383, Abstr. No. 1335, it is maintained that coloured inks do exhibit spraying. If spraying is not found so frequently with coloured inks it is because (a) less coloured inks are used, and (b) the presses are not run at such high speeds as when printing black inks. The addition of materials such as magnesia reduces the trouble. Two - revolution presses with their narrower steel distributor rollers, show more tendency to spray than do the larger rollers of stop-cylinder machines, owing to their higher peripheral speeds. Spraying disappeared when the natural rollers were replaced by Buna rollers. When synthetic varnishes are used, the rollers swell and become sticky which frequently leads to misting. Printing Abstract 4, No. 6, June, 1949, pp. 260–61.

*** FAST GREENISH-BLUE INK PIGMENT. *Chemical Industries* 65, No. 3, September, 1949, p. 408. Production of a light-fast blue pigment for printing inks has been announced by the Du Pont Co. It is a green shade "Monastral" blue pigment. This is the brightest of all the "Monastral" blue pigments and it has the same light-fastness and resistance to chemicals that the others of this family of pigments have shown. The price is the same as for regular "Monastral" blue and the cost of producing printing ink with it is almost as low as it is with colors which fade. Falling in the peacock-blue range, the pigment meets a long standing need for a blue of this brilliance which does not fade.**

*** THE COLOUR OF PIGMENT MIXTURES. D. R. Duncan, Ph.D. *Journal of the Oil and Colour Chemists' Association* 32, No. 349, July, 1949, pp. 296-321. A classification is presented of the different types of colour mixture of practical importance. The laws governing the colour of mixtures of pigments and pigmented compositions are explained and their application to practical problems is discussed, with particular reference to the measurement of the relative values of the coefficients of scatter and absorption of different pigments and their use in the prediction of the colour of pigment mixtures, of the range of colours obtainable from a given set of pigments, and of the approximate proportions of different pigments which must be mixed in order to produce a given color.**

*** SOAP AND ALKALI RESISTANCE OF PRINTING INKS. *Journal of the Oil and Color Chemists' Association* 32, No. 349, July, 1949, pp. 322-330. A committee for the investigation of the soap and alkali resistance of inks attemped to devise standard methods for these measurements. Five visual observations were made of the effects, but no instrumentation was used in evaluating the results. The tests were performed by 27 collaborators and 8,000 observations were made and evaluated. Fair to good agreement among these investigators was reported regarding the quality of the inks. The committee concluded that the methods of testing were valid, and described the procedures in detail.**

*** TAKE THE HEAT OFF. Paul J. Thoma. *American Ink Maker*. 27, No. 11, November, 1949. Pages 25-26. A discussion of the problems involved in the production of *Time* and *Life* magazines.**

191539

The use of heat-set inks made Life possible. Nearly one million dollars per year is lost by Time Inc., in downtime cause by paper breaks on the presses. The ink dryers degrade the tearing strangth of the paper by virtue of high temperatures and many paper breaks occur at this point. If quick setting inks which need no heat were developed, it would save the printer much time and money. Limitations of ink are determined by the press, the rollers, the paper, and the cost of the ink.

• DISCUSS DRIERS AND INK GAGES. Anon. *American Ink Maker.* 27, No. 11, November, 1949, Page 55. Abstracts of three papers presented at the meeting of the Paint, Varnish, and Plastics division of the American Chemical Society. 1. The Roller Type Applicator Fineness of Grind Gage and its Application to the Evaluation of 3 Roll Mill Printing Ink Pigment Dispersion. An equation is empirically derived relating the number of runs through an ink mill with the specific numerical index of the ink (a measure of the fineness or grind). 2. Amine Derivatives that Prevent Dry ing Loss On Aging. 3. Determination of the Specific Gravity of Pigments. A Weighed Amount of pigment is thoroughly dispersed with a known amount of vehicle, and the specific gravity of the ink determined. Knowing the specific gravity of the vehicle the specific gravity of the pigment may be calculated.

• INK TACK STUDIES REPORTED. Anon. *American Ink Maker.* 27, No. 11, November, 1949, Page 57. An abstract of a paper given by Andries Voet and Claude F. Geffken on "Fundamentals of Tack in Printing Inks." Studies were made on the energy of the film separation showing the relation of this energy to the nature of the adhering surfaces, rate of separation, plastic viscosity, and temperature. It is shown that film separation does not occur by plastic flow, and the fundamental mechanism of the ink film rupture is discussed.

DETERMINING MILEAGE CHARACTERISTICS OF INK. W. F. Talbot and Rolf Buchdahl. *Chemical Abstracts* 43, No. 21, November, 1949. A radioactive substance is incorporated in a nonradioactive printing ink, in quantities insufficient to change the printing characteristics of the ink. Prints are made with the ink upon a surface and the radioactive of the imprinted surface is measured.

PRINTING PROPERTIES AND PLASTICITY DIAGRAMS OF TYPOGRAPHIC INKS. D. Tollenaar Proc. Intern. Rheological Congr. (Holland, 1948) 1949, 11-26-4, 6 plates; discussion III-69-70. (A1656/1206). The course of two printing phenomena (picking and the filling up of screen work) can be deduced from the plasticity diagram. Picking increases with ink viscosity and the thickness of the ink film. Picking tests should be carried out with a mineral oil of known viscosity (e.g., 500). The three types of plasticity diagrams found in letterpress inks are those for (1) thin rotary press (news) inks; (2) a good quality halftone black ink; (3) certain other letterpress inks. Picking is also decreased when there is no yield value. Hence it is doubtful whether a yield value has any significance in printing inks. The plasticity diagram of short vehicles exhibits a pronounced yield value at moderate shearing stresses as well as a low viscosity. Short vehicles lead to filling up, while long vehicles (no yield value, but viscosity) give rise to picking and ink spraying. By making mixtures of short and long (oil-containing as well as aqueous) binders, it is possible to obtain easily printable inks which have no pronounced yield value and yet produce a sufficient reduction in viscosity at high shearing stresses. Printing Abstracts 4, No. 10, October, 1949, Page 483.

• COMPARATIVE DISPERSION OF PIGMENTS IN VARIOUS VEHICLES. J. M. Berstein. *American Ink Maker.* 27, No. 11, November, 1949, Pages 29-33. A study of the degree of fineness of grind of printing ink pigment, measured by different methods. Five different pigments were dispersed in each of 5 vehicles by means of the ink mill and the fineness of grind was determined after each run through the mill by means of the fineness of the Grind Gage and photomicrographs. Comparisons were made of the different pigments and different vehicles. Steam set inks tend to pick up moisture during grinding and the particle size increases. Electron photographs confirm the data from the Fineness of Grind Gage.

• NEW DEVELOPMENTS IN CARBON BLACK. L. J. Venuto. *American Ink Maker* 27, No. 12, December, 1949, Pages 23-25 (3 pages). This is a discussion of the different methods of producing carbon black pigments. The difference between the production of channel blacks and furnace blacks is described, and the developments in the production of furnace blacks are described. Comparison is made of the pH values, particle sizes, structure, oil absorption, and gloss of the various blacks. The blending of different blacks to produce better inks is discussed.

• A REPORT ON COMMON INK DRYING PROBLEMS. A. C. Healy. *American Ink Maker* 27, No. 12, December, 1949, Pages 26-28, 51 (4 pages). The author discusses the mechanism of ink drying, as well as various troubles encountered by pressmen. The effects of the following conditions are discussed briefly:

Poor drying
Chalking
Non-uniform drying
Excessive drier problem
Drying on the press
Drying in the can
Crystallizing
Odor
Atmospheric conditions
Storage

METHODS OF AN APPARATUS FOR DRYING PAINT, INK OR THE LIKE ON ARTICLES. *British Patent Number 617,556.* The method is designed particularly, but not exclusively, for drying paint or ink on metal plates so as to minimize the risk of damage during stoving. It consists in passing the articles through a stoving space and simultaneously passing heated gas through the stoving space, the velocity of the heated gas where it contacts the articles in the stoving space being greater than 7 ft. per sec. *Printing Abstracts* 4, No 8, August, 1949, P. 381.

APPARATUS FOR EFFECTING THE HARDENING OF DEPOSITS OF INK AND LIKE COMPOSITIONS. *British Patent Number 621,996.* The deleterious effect of sulphur dichloride in paper when used for accelerating the drying of inks is overcome by providing means for regulating the time of contact of the dichloride vapour with the printed surface and reducing or eliminating contact of the vapour with the other surface of the paper. The apparatus also provides for dissipating the excess of sulphur dichloride left in association with the printed paper after treatment. The example of an application of the process is in drying of ink on decalcomania transfers. *Printing Abstracts* 4, No. 8, August, 1949, P. 383.

APPARATUS THAT FOLLOWS THE DRYING OF PRINTING INKS. P. Fremy. *Congres Technique International de l'industrie des Peintures et des Industries Associees Paris,* 1-6 October, 1947, pp. 643-45. Published in 1949. Bands of an ink to be tested are printed on paper. This sheet is covered with a blank sheet and both are attached to a drum which rotates once in three hours, while a glass stylus is pressed onto the paper with a 500-gm. weight. The stylus, which

is moved by a worm gear, draws a transferred ink line on the upper paper as long as the ink impressions are wet. It is stated that, as soon as the line becomes invisible, the ink is dry. When completed, the test sheet carries a series of parallel lines, and the number of lines, multiplied by three hours, is the drying time. As an example of data obtained with the apparatus, drying time in hours is plotted against the age of an ink in days, for various manganese drier concentrations. *Monthly Abstract Bulletin* 35, Number 11, 1949, P. 435.

GLOSS MEASUREMENTS OF PAPERS: A COMPARATIVE STUDY. V. C. W. Harrison. *J. Science Instruments* 26, 84-90, March, 1949. The performance of the Bausch and Lomb, and Sheen glossmeters is examined. Comparison of gradings of nine printing papers according to visual and instrumental means shows that, despite high correlation between them, there are nevertheless important discrepancies not attributable to sampling, instrumental, or personal errors. The effect of angle of incidence and viewing on grading is investigated and the discrepancies were found to become more pronounced at greater angles. It is concluded that for the limited range of paper tested, the most satisfactory grading is given by measurement of the intensity of light received when angles of incidence and viewing are 45 degrees. *Monthly Abstract Bulletin* 35, Number 11, November, 1949, Page 415.

* THEORY OF THE PRINTING OF LITHOGRAPHIC INKS. Part two: Greasing and Theory. Dr. Everett Carman. *Modern Lithography* 18, No. 4, April, 1950, Pages 45-48 (4 pages). In part two the author states that greasing tendency of an ink is a function of the wetting properties of both pigment and vehicle. He describes the effects of each, and by tables and diagrams shows that non-greasing inks should contain combinations of (1) hydrophobic pigment and hydrophobic vehicle, or (2) hydrophilic pigment and hydrophilic vehicle, or (3) hydrophilic pigment and hydrophobic vehicle. The combination of a hydrophobic pigment with a hydrophilic vehicle causes greasing.

* USE OF AMINE ADDITIVES TO PREVENT DRYING LOSS ON AGING. A. C. Zettlemoyer and Donald M. Nace. *Industrial and Engineering Chemistry*, No. 3, Vol. 42, March, 1950, Pages 491-495 (5 pages). To prevent loss of drying on aging of printing inks pigmented with alumina hydrate lakes, the investigation of hemin, o-phenanthroline complexes of the drier metals, and many other nitrogen-containing additives has been undertaken. The compound DMP-30 (2,4,-6-tri (dimethylaminomethyl) phenol) has been found to be the most effective and at the same time the most practical agent of those tested. Excess DMP-30 tends to inhibit drying and to accelerate livering; therefore, it should be used only when needed and then only in amounts of 1 to 2% of the pigment. The mechanism of the activity of DMP-30 has been investigated. The DMP-30 is almost completely adsorbed by the pigment and the amount of cobalt adsorbed is not reduced by its presence. The conclusion is reached that DMP-30 is effective because it changes the acidic nature of the pigment surface.

* ORDERING PRINTING INKS. Osborne C. Holland. *Interchemical Review* 8, No. 4, Winter 1949-1950, Pages 113-118 (6 pages). On any printing job the inkmaker should be advised beforehand, in detail, of all the important factors. Among them are: 1) Stock—whether it's paper, board, metal, plastic, etc.; 2) End use—protection against grease, hot wax, alkali; 3) Method of printing, including press type and speed; and 4) Order of putting down color.

* INK BEHAVIOR. *American Ink Maker* 18, No. 4, April, 1950, Page 31. A brief account of the discussion of ink behavior on roller systems at the National Printing Ink Research Institute, February 24, 1950.

* THEORY OF THE PRINTING OF LITHOGRAPHIC INKS. Part two: Greasing and Theory. Dr. Everett Carman. *Modern Lithography* 18, No. 4, April, 1950, Pages 45-48 (4 pages). In part two the author states that greasing tendency of an ink is a function of the wetting properties of both pigment and vehicle. He describes the effects of each, and by tables and diagrams shows that non-greasing inks should contain combinations of (1) hydrophobic pigment and hydrophobic vehicle, or (2) hydrophilic pigment and hydrophilic vehicle, or (3) hydrophilic pigment and hydrophobic vehicle. The combination of a hydrophobic pigment with a hydrophilic vehicle causes greasing.

METHOD OF MULTI-COLOUR PRINTING. A. H. Stevens. *British Patent Number 591,940.* In a multicolour printing process in which successive impressions are made from a series of inks, each ink after the first applied ink, contains a larger proportion of solvent and the solvent is of lower boiling point than the ink of the immediately preceding impression, so that when the printed sheets are heated, all the impressions dry substantially simultaneously without running of the last applied ink. *Official Journal of the British Patent Office* 3057, September 17, 1947, Page 1103.

* WET-PRINTING PROCESS. R. D. Allworth. *Canadian Printer and Publisher* 59, No. 2, February 1950, Pages 23-4 & 60 (3 pages). To get four wet impressions of ink to "trap" to the paper properly, it has been found that the total content of all plates, in any given spot, should not exceed 200% ink. This has been confirmed by a variety of tests made in the engraving departments at Rapid Grip and Batten Ltd. The best method of reducing the amount of colour applied is by photographic masking. The amount of colour applied can also be reduced by eliminating a colour. *Printing Abstracts* 5, No. 5, May 1950, Page 236.

* LIMITATIONS OF INK ADJUSTMENTS TO PAPER. F. A. Weymouth. *Paper Trade Journal* 130, No. 24, June 1950, Pages 118, 120-21 (3 pages). This article reviews the methods by which a good printing job is accomplished. It is felt that more press troubles would be eliminated if limitations of the adjustments of inks to papers are better known by the individual who chooses the paper for the job. Ink adjustments that can be made to certain categories of papers are discussed. It is pointed out that new tools are available in the form of tack-graded inks which should lend assistance in the choice of papers for jobs. Not all papers are covered but examples are given and the suggestion made that these ideas can be carried out in other categories of paper. Comments on printability testing are given. It is reported that an increasing number of paper mills and printers are using these methods and are finding them to be of assistance in paper control.

Ink materials and structures

* DYNAMICS OF FILM SEPARATION IN THE PRINTING PROCESS. Andries Voet. *American Ink Maker* 28, No. 6, June, 1950, Pages 36 & 57 (2 pages). The extremely short time (10-5 sec.) during which the ink of a halftone dot is transferred means that ink film splitting is an impact rather than a static phenomenon. Failure occurs under impact when the rupture energy, rather than the maximum stress, is exceeded. Determination of the energy of separation is made by measuring the loss in potential energy of a cylinder rolling down an inclined plane and over an inked plate, and rising on a second plane. The results indicate that splitting is more of an elastic than a viscuous response to stress.

Drying oils

* DETERMINATION OF COBALT IN NAPTHENATE DRIERS. Hugh B. Gro-

den and William D. Lang. Stevens Institute of Technology, Hoboken, N. J. *Paint, Oil and Chemical Review* 113, Number 2, January 19, 1950, Pages 14, 16, 17, 18 and 42 (5 pages). A study was made of the determination of cobalt in paint driers. The potentiometric titration with ferricyanide was found well adapted to the needs of an industrial laboratory, since it is accurate, does not require excessive time nor excessively elaborate equipment, and is less subject to error from common contaminants than other methods. Various methods for conversion of the drier sample to an inorganic form were investigated. The decomposition of the drier by means of nitric and sulfuric acids was found satisfactory and more economical of time (and reagents) than other methods studied. Details of the preferred procedure are given. This procedure is being used for the purpose of factory control. It is giving excellent satisfaction.

Ink testing and control

• A PARALLEL PLATE VISCOMETER FOR PRINTING INKS. Andries Voet and John S. Brand. Paper Presented at *Division of Paint, Varnish and Plastics Chemistry* Meeting, September, 1949, pp. 205-213 (9 pages). A parallel plate viscometer has been developed for routine testing of the viscosity of printing inks. An ink drop of definite weight or volume is placed between two acrylate plates. When the blocks separating the plates are removed, the rate of spread of the ink drop is measured. The paper discusses the effect of added pressure, temperature, etc. on the rate of ink drop spread. From the data, information may be obtained concerning the "length" of the ink under shearing stress, as well as the viscosity of the ink.

NON-SCRATCH. Anon. *Canadaink* No. 28, September, 1949, Page 4 (1 page). The scratch resistance, smudge, carbonizing and halftone hardness tests for the hardness of inks are outlined. *Printing Abstracts* 4, No. 11, November, 1949, P. 545.

Paper and ink relationships

• PRINTING INK-PAPER RELATIONSHIPS. A. C. Zettlemoyer, G. G. Eckhart, W. C. Walker. *American Ink Maker* 27, No. 8, August, 1949, pp. 23-26, 57, 59 (6 pages). Previous literature on the relationship of printing ink to paper has been reviewed with special emphasis on the work that has been reported with regard to printability or printing qualities. A series of commercial black inks have been tested for mileage on a series of different commercial papers. It has been found in general that the higher the porosity of a paper and the higher the reflectance of the bulk ink, the lower is the mileage obtained and the lower is the ultimate print blackness. Variations found in the mileage and ultimate print blackness of the commercial ink-paper combinations examined were large and significant. A theoretical equation has been presented which relates the reflectance of solid prints to the film thickness for any ink-paper combination. This equation can be put in linear form for evaluation of the constants involved and for estimation of mileage at any desired blackness.

• PRE-TESTING PAPER FOR INK ABSORPTION. Doctor Leo Cahn. *Modern Lithography* 18, Number 1, January, 1950, Page 51-52 (2 pages). A description of the K and N ink absorption test for coated papers and the use of a reflection densitometer for recording densities of the stains obtained. It is claimed that the accuracy is within $\pm$ 10 per cent. Good papers show a uniform stain with a density between .15 and .28. Non-uniform stains indicate papers with tendency to produce a mottled print. The stain density on mill-tinted papers can be measured by using the proper filter in the densitometer.

• HARDER PAPER AND TACKIER INK. Charles F. King. *Inland Printer* 124, Number 4, January, 1950, Page 39-

42 (4 pages). A discussion of offset printing on coated and enameled papers, and troubles commonly encountered. The author recommends the addition of varnish to inks for harder papers to increase ink penetration and prevent waterlogging.

• PAPER, INK AND PRINT. *Journal of the Oil & Colour Chemists' Association* 33, No. 356, February, 1950, Pages 69–82 (14 pages). A symposium including three papers and discussion. The papers were: 1. Developments in the Paper Industry, by Julius Grant, 2. The Trend of Development in Printing Ink Research, by R. F. Bowles, 3. Modern Printing Methods in Relation to Ink and Paper, by R. B. Fishenden. The discussion centered on the relation of ink consistently to printing performance, print quality, and drying.

FAN ATTACHMENT FOR HUMIDITY INDICATOR. *Instruments* 22, No. 8, August, 1949, p. 704. New motor-operated fan for attaching to maker's Relative Humidity Indicator permits accurate humidity readings to be obtained quickly in shops, rooms and even small confined spaces near or in operating machinery. Powered by dry cells, fan will move air over indicator's wick in sufficient volume to permit obtaining stable readings within 30 seconds. No calculations are required, as readings are immediately obtained on the instrument's simplified slide rule. Weston Electrical Instrument Corp., 617 Frelinghuysen Avenue, Newark 5, N. J.

Technical discussions

* PLASTIC SHEETS IN MAP PRODUCTION. Samuel Sachs. *Modern Lithography* 17, No. 9, September, 1949, pp. 33-4, 91 (3 pages). Vinylite is now being commonly used in the compilation and drafting of maps. This article discusses less known but also important applications of Vinylite such as in the production of color proofs directly from negatives, in the preparation of artificial negatives, in the production of duplicate negatives without the usual intermediate step of first making a positive, in the preparation of gradient tints, and for blackline prints. Other minor applications are discussed and suggestions given for expansion of these uses.

* TYPE REPRODUCTION PROOFS. *American Pressman* 59, No. 10, September, 1949, pp. 25-6. A good reproduction proof should be a close approach to perfection so far as each letter is concerned. The print of an individual letter should be clean, sharp, well covered and should not indent the stock on which the proof is made. Discussed in detail are the most important factors that deserve careful consideration, they are as follows: Type, Rollers, Ink, Stock, Proofer, Examination.

* CONTROL OF TONE VALUES. Charles F. King. *Inland Printer* 123, No. 6, September, 1949, pp. 35-38. This article covers the need for standardized platemaking procedures, wherein the aim in development is to produce a plate that will run well, rather than the adjustment of tone values. To do this the platemaker must be given a hard-dot transparency and one on which all tone corrections have been made. If the dot-etching requires a soft-dot camera positive, it is suggested that a contact negative and then a contact positive be made.

PRINTER'S BLANKET. Lewis R. Liles and Edger W. Chapman. *U. S. Patent No. 2,489,791*, October 16, 1944. *Official Gazette* 628, No. 5, November 29, 1949. A printer's blanket uniform in flexibility and highly stretch-resistant in a direction of the blanket for resisting objectionable deformation in the use thereof, said blanket comprising a resilient impression layer of ink-retainable material having the physical properties of soft vulcanized rubber resistant to the chemical action of ink materials and solvents, and a flexible backing integral with said impression layer, said backing comprising stretch resistant material including glass in filamentary elements twisted together as yarns and woven in fabric form to provide tension members extending along the blanket in said direction thereof.

* HANDBUCH DER REPRODUKTIONSTECHNIK. BAND III PHOTOLITHOGRAPHIE, OFFSETREPRODUKTION, LICHTDRUCK. *Book.* 211 pages. (In German) $2.30. 1949. *Polygraph Verlag GHPH Frankfurt Am Main.* As the title states this is a handbook of reproduction techniques. It covers the principal methods of printing

plate production in lithography and collotype together with plate-making equipment, presses and paper. The various processes are described in general rather than with detailed instructions, and does not attempt to place relation values. It is of interest primarily to lithographers who are interested in comparing German and American techniques.

* NEW OFFSET PROOF PRESS. Anon. *The Photoengravers Bulletin.* XXXIX, No. 4, November, 1949. Page 30. An announcement of the first Vandercook offset proof press, designed to "produce proofs which closely approximate the final printed results on production presses." Important features enumerated are accurate water and ink controls, stepless speed control, instantly adjustable impression. Maximum plate size is 25½" x 36".

* REPRODUCTION PROOFING TECHNIQUES COMBED AT ITCA'S BOSTON MEETING HELD IN BOSTON. *Printing Equipment Engineer.* 79, No. 2, November, 1949. This article is a report of the Reproduction Proof Symposium held at the ITCA convention in Boston, October, 1949. G. S. Hammer, Jr. of Forbes Litho Mfg. Co. described the faults with type reproduction, illustrating his discussion with slides, some of which are reproduced in this article. Clyde S. Hunter of McLaurin-Jones discussed "Paper for Reproduction Proofing," describing stocks to suit varying conditions. Harold M. Cowley, I.P.I. discussed inks for proofing. "Care of Proofing Rollers" was discussed by Aaron A. Hobart of Wild and Stevens. O. F. Duensing of Vandercook Research Inc. took up the procedures and problems involved in making transparent proofs.

* KEYS TO COST CONTROL. Frank R. Somers. *Printing Magazine,* 73, No. 11, November, 1949. The "Management Cost Control Manual" was written for printers and lithographers who desire to install a cost finding system, also for the benefit of the members of the industry who have been operating cost finding systems for many years. The methods outlined in this manual are methods which have been in practical use and have proven and demonstrated their worth; consequently, through the medium of this manual, the NAPL cost committee is passing on the benefit of the accounting and cost experience of some of the best managed plants in the industry. The article covers control of manufacturing costs and control features of the departmental operating statement. They are as follows: Controlling Material, Controlling Labor, Overhead, Keeping Foreman Informed, Important Improvement, Time and Motion Studies, Percentage of Used Capacity, and Budgeted Cost Comparisons.

* THE WEB OFFSET PRESS, DOES IT FIT INTO MY PLANT? Pat Kirkpatrick. *National Lithographer* 56, No. 11, November, 1949. Web offset presses cost from $9,000 to $3,000,000. Tissue paper, newspaper stock and rough texture stock can all be run on such presses. The number of men needed per press varies from two up, depending on the size of the press. Paper spoilage in one plant varied from 9 to 10% compared with 5 to 12% for sheet fed presses. The longer the run, the lower the precentage of spoilage. Some plants use a web press only for runs of 75,000 or more while others make short runs and use 10 to 50 plates a day. Storage space for paper rolls must be considered. It varies from 500 sq. ft. to 2,000 sq. ft. Rolls must be handled properly to prevent damage to the ends. After installation of the first Web press it may take 2 to 6 months to get it into full production, depending upon the experience of the men.

The final question to be answered is whether enough contracts are in pros-

pect for the right kind of work to keep a web press in production.

* KEEP AN EYE ON YOUR ROLLERS. Anon. *Canadian Printer and Publisher.* 58, November, 1949, No. 11. The quality and length of service given by rollers depend upon the care given them. Too many rollers are treated as a necessary evil to be given as little attention as possible. They are carelessly handled and improperly cleaned. Mentioned are some of the highlights of an article on roller maintenance in American Pressman. They are as follows: A good way to wash rollers, How dried ink forms on rollers, Rollers should be well dried, and Rollers should be inspected for small ink skins.

* NEW DEVELOPMENTS. A. B. Woodruff. *Share Your Knowledge Review* 31, No. 2, November, 1949, Pages 33-41 (9 pages). Several of the recent developments of the chemical Laboratory of the Harris-Seybold Co. are listed. Advantages are given for bi-metal and tri-metal plates. Factors are listed which affect the speed at which a press can operate, such as the characteristics of the paper, thickness of paper, condition of paper, and the humidity in the pressroom. Ten different methods for static elimination have been studied. Radioactive bars are the best, and studies are being made on the use of, ultra violet light. Present methods for water control are deplored and new methods are being studied. There has been great progress in the development of better ink rollers, better ink and better rubber blankets. The field for the web press is found to increase. The use of Lithography has been increased faster in recent years than any other method of printing, with an increase of quality which makes it compare favorably with any other method.

* RECENT ADVANCES IN OFFSET LITHOGRAPHY FOR METAL DECORATING. William F. May. *National Lithographer* 56, No. 12, December, 1949, Pages 26-27, 75, 77, 81, 83, 85 (7 pages). Advances in the field of metal decorating during the last 20 years have included tandem and multi-color presses; varnishing over the wet ink; improved printing plates such as stainless steel, monel metal, and bi-metal plates; wet shot blast method for graining stainless steel plates; improvements in feeding and gauging; faster time for inks and varnishes, which reduces the time interval to only a few minutes; variable speed drives on press dampening units to give the pressmen more control over his water supply; better rubber blankets and rubber ink rollers; and other miscellaneous improvements such as safety devices on the press, and gadgets for preventing foreign particles from ruining the press cylinder.

* WHAT'S AHEAD IN OFFSET NEWSPAPERS? C. H. Flint. *Modern Lithography* 17, No. 12, December, 1949, P. 31, 93, 95, 97 (4 pages). The introduction of a photo-composing machine has made possible the printing of newspapers by offset. In this method, the type is photographed directly on the film. If rapid plate etching methods are developed, relief plates may be made directly from this and used in small newspaper plants. This would eliminate the need for water on the press and its inherent difficulties. Large offset presses for news have been built, primarily for Australia and Britain, and they are briefly described in this article.

* COLOR OFFSET AT NEWSPAPER SPEEDS. *Modern Lithographer and Off-Set Printer* XLV, No. 11, November, 1949, P. 211 (1 page). Description of some of the features of the new Hoe and Crabtree 4 color perfecting web press. The web is 60" and the press prints 4 colors on both ends of the sheet. One press is being built for Aller Press, Copenhagen. It will print 30,000 copies per hour of a 16 page magazine in 4 colors. Another

press is being built for the Melbourne (Australia) Argus. Aller bi-metal plate will be used on the press. There is no gap in the plate cylinder. Moisture is supplied by a brush on each dampening system with differential speed control. Changes have been made in the inking mechanism.

* REPRODUCTION PROOFS. *Modern Lithography* 17, No. 11, November, 1949, P. 84 (1 page). Published by the Printing Industry of America, Inc., 719 Fifteenth St. N.W., Washington 5, D. C. A report on methods, materials and equipment necessary for the successful production of reproduction proofs. The report covers (1) Type and type metals, (2) A suitable proof press, its condition, care and operation, (3) Competent draftsmen, (4) Suitable ink and paper, and (5) Plant conditions. The price is $5.00 to members; $10.00 to non-members. Subscribers to PIA Research and Operations Manual ($20.00) receive Reproduction Proofs as the 14th manual of the series.

* PHOTO-COMPOSING TECHNIQUE EXPANDS. R. B. Fishenden. *Modern Lithographer and Offset Printer* XLV, No. 11, November, 1949, P. 209-210 (2 pages). Photo-composing methods are coming to replace type setting in the litho industry. Various makes of machines have been in use since 1946, and the uses of these are discussed. Troubles with alignment and spacing apparently are not inherent in the instruments. The cost of maintaining a large stock of metal types is eliminated, while speed of production is comparable to present type setting methods.

* TREATMENT OF RUBBER OFFSET BLANKETS. H. Meyer. *Druckewerbe*, 1949, 2 (14), 222-3 (July 16) (In German). Rubber blankets should be stored flat with rubber surface to rubber surface. A mixture of ⅓ benzine, ⅓ petrol and ⅓ 99% alcohol (free from methyl alcohol) is recommended for washing; hints are given on its application. The blankets should then be dusted with talcum and flowers of sulphur. Hints are also given on attaching and using the blankets. *Printing Abstracts* 4, No. 10, October, 1949, P. 443.

* WANTED: TRAINED TECHNICIANS. Charles F. King. *Inland Printer* 124, No. 1, P. 41-43, October, 1949. A description of the problems that a novice technician would encounter in the lithographic industry. A typical example of shop troubles is cited wherein paper stock is erroneously blamed for press troubles that a trained technician would have spotted: The inadequacy of pick and tack tests are discussed, as well as the difficulty of nomenclature. The scope and limits of the field of work of a control technician are outlined, and suggestions made to the neophyte chemist or technician in the lithographic industry.

* STRETCHING ZINC PLATES. *Modern Lithographer and Offset Printer* XLV, No. 9, September, 1949, P. 176-178 (2 pages). A new zinc stretching machine is the "Reperex", made by the Linmac (Engineers) Ltd., of Wembley and marketed by C. W. Sanford Ltd. of 8 Salisbury Court, Fleet Street, London, E. C. 4. It weighs about 14 cwts., occupies a floor space of under 6 sq. ft. and will take plates up to a maximum size of 57 by 52 inches. This machine will, it is claimed by its makers, stretch a zinc plate at any angle in any direction, diagonally, at one end, or at both ends, locally or over the whole of the plate. The procedure of stretching a zinc plate is discussed.

* A PRACTICAL MICROSCOPE FOR LITHOGRAPHERS. Paul W. Dorst. *Modern Lithographer* 17, No. 10, October, 1949, P. 49-50-51-52-71 (5 pages). The practical importance of a microscope in lithographic trouble shooting is extremely great since it gives infor-

mation about the surfaces of plates, coatings, blankets, paper and inked images. Important depths can be calculated knowing the angle of illumination and measuring the length of shadows. Slopes of the sides of depressions can be measured by noting the illumination angle at which shadows disappear.

* NEW PHOTO-TYPESETTING SYSTEM. *Modern Lithography* 17, No. 10, October, 1949, PP. 65-145-147. A new photo-typesetting system using a typewriter actuated mechanism to produce positive or negatives of justified type composition, without the use of metal type, was unveiled in Cambridge, Mass., September 15. Developed by the newly formed Graphic Arts Research Foundation Inc. The device will be manufactured by the Lithomat Corp. It is said that successful photographic type composition represents the key to the development of entirely new printing processes. Higonnet and Mayroud have developed a typewriter actuated photographic type composing machine which produces photographic positives or negatives in any family of type, in any size with automatic justification (even margin) to any pre-determined length of line. These photographic positives or negatives, claimed to have better definition than type itself, can be employed to produce any type printing plate whether relief, lithographic or gravure. The use of this new photo-typesetting machine is discussed.

* THE 10 MOST COMMON TROUBLES ON SMALL OFFSET PRESSES. Ted Jarosik, (2 parts), *American Printer* 129, No. 3, September, 1949, pp. 41-42-44 (3 pages) and *American Printer* 129, No. 4, October, 1949, pp. 43-44. An accurate record of trouble calls on small offset presses in the territory around Detroit for 15 months during 1948 and 1949. Ninety-seven calls were made and the troubles involved were classified as follows: Poor printing quality—20; all types of streaks—16; register troubles —16; Miscellaneous mechanical troubles —16; feeding troubles—13; Scum and dirty printing—11; Plate troubles (mechanical)—5. In part II of his articles "The 10 Most Common Trouble in Small Offset Presses", Mr. Jarosik discusses in detail the cause of register troubles, feeding troubles, scum or dirty printing and plate troubles. It is mentioned that at least one-half of the service calls could have been eliminated by the application of knowledge already in the plant. The order of frequency of the 10 most common troubles was as follows: 1. Improper ink roller settings; 2. Improper blanket and plate height; 3. Carlessness and dirty equipment; 4. Inadequate lubrication; 5. Improper setting of feeders; 6. Improper setting of guides; 7. Mechanisms out of adjustment; 8. Worn or damaged parts; 9. Bad plates or chemicals; 10. Miscellaneous minor troubles of singular occurrence.

* ROLLER STRIPPING — THE PRESSMAN'S BIGGEST BUGABOO. Oscar Diehl. *Lithographers Journal* 34, Number 10, January, 1950, Pages 8, 9, and 43. (3 pages). Among the suggested causes of roller stripping are: use of transparent inks, cutting inks excessively with compounds, too strong a fountain etch, too much gum in the fountain solution, too much water, too much phosphoric acid in the fountain solution, and a film of dried ink on the rollers. Among the suggested cures for roller stripping are: scrubbing with pumice and then using acetic, nitric or hydrochloric acid; copper plating the steel rollers; have steel rollers coated with Ebonite, use of a lye solution once a week after press is washed up; and washing up with Universal Metal Putz Pomade.

* WHAT TO DO ABOUT IMPRESSION SLUR. Robert F. Reed. *American Printer* 130, Number 1, January, 1950, Pages 49-51 (3 pages). *Printing Equip-*

ment Engineer 79, Number 4, January, 1950, Pages 26, 27, 54, 56, (4 pages). *Modern Lithography* 18, Number 1, January, 1950, Pages 30-32 (3 pages). The cause of "impression slur" is discussed. It is more pronounced on coated than on uncoated papers because of the ease with which ink lubricates smooth surfaces. The importance of proper packing and a minimum of back cylinder pressure is emphasized.

FUTURE OF COLOUR IN NEWSPAPERS LIES IN OFFSET LITHO PROCESS. C. H. Crabbtree. *Newspaper World*, 1949, No. 2698, 15 (Oct. 6). *World's Press News*, 1949, 41 (107,312) (Oct. 6). A rotary offset press which is to print eight pages in black and three colours and eight pages in one colour, all of which can be run into the same folder with 24 pages of letterpress printed on a rotary letterpress machine set in line with it, was shown. One of the many features of the reel-fed offset rotary was the method of running the sheet through the printing units. The offset cylinder of the one printing acts as the impression cylinder for the other printing—both printings taking place simultaneously. This, of course, makes all set-off or blanket print impossible. Special provision is made for maintaining the register of the sheet should there be any paper stretch between one colour and another. The machine is fitted with a special type of ink pump. *Printing Abstracts* 4, Number 12, December, 1949, Page 610.

SOME FACTS ABOUT PHOTO-LITHOGRAPHY. *Pottery Gazette* 1949, 74, (868), 1151-3 (Oct.) An account is given of the manufacture of ceramic decalcomania transfers by photo-litho at the Leyton Studios Ltd., Manchester. *Printing Abstracts* 4, Number 12, December, 1949, P. 611.

• MUSIC—HOW IT IS PRINTED. Dr. R. R. Voorhees. *Printing Equipment Engineer* 79, No. 1, October, 1949, Pages 21-24 (4 pages), Part I. This article describes the involved handwork of the zinc plate method of reproducing music. By means of a set of dies the notes and symbols are punched on a zinc plate, which is proofed. Proof is copy read and corrections made by more handwork. Plate is printed on the offset press. *Printing Equipment Engineer* 79, No. 2, November, 1949, Page 26 (1 page), Part II, Music Type. Description of typesetting method of producing music manuscripts. The type font consists of music symbols which are hand composed and printed. This method has been discontinued because of expense of manufacturing type. *Printing Equipment Engineer* 79, No. 3, December, 1949, Pages 73-75 (3 pages), Part III, Musicktype. A simplified and more economical method of reproducing music manuscripts is to set up plastic L-shaped musical symbols on a rather large composing board. A complete score is set up, photographed and printed by the offset process. *Printing Equipment Engineer* 79, No. 4, January, 1950, Page 46 (1 page), Part IV, Typemusic. Typographical method of music reproduction is done with a typewriter-like machine equipped with music symbols. Music is typed on a 9 x 12 sheet of paper through a special carbon ribbon. Final reproduction is accomplished by offset process or photo-engraving process.

• PROVING ON A PRODUCTION PRESS. Frank Peterson. *Modern Lithography* 18, No. 2, February, 1950, Pages 32, 33, 93, 95 (4 pages). The advantages of proving on a production press are discussed. The proof plate should have the same grain as the press plate, and the coating and exposure should be the same. Control of exposure is best if a light integrating exposure meter is used

and if a Sensitivity Guide is exposed on each plate. The latter also aids in obtaining controlled development. A quarter inch bar of color and a halftone step scale should be included on the proof plate to aid the pressman in obtaining a uniform lay of color. An expert pressman should do the proving and the press should be in good condition. The paper should be the same as for the job, and 200 sheets or less are needed for the average four or five color job. Operating cost will depend on volume of work. If a number of jobs can be proved concurrently, color by color, the costs are cut considerably.

• THE FUTURE OF OFFSET IN PUBLICATIONS. B. D. Chapman. *Modern Lithography* 18, No. 2, February, 1950, Pages 34, 35 (2 pages). An outline of developments in long-life plates, high speed web presses, phototypesetting machines, and in the making of color separations, that promise offset leadership in the publication field.

• UNEVEN PRINTING. *F & L Litho Letter*, March, 1950, Pages 1 & 2 (2 pages). While it is the general impression that on some presses the print is stronger on the gripper edge the heavier printing area does change under various conditions. The form rollers will build up a charge of ink while going over the gap if they are set too tightly to the distributing roller to give a dark streak along the gripper. Other factors are incorrect ink ductor timing; and tightening the blanket on the rear edge only, which decreases the pressure in the rear relative to that along the gripper. Overpacking causes blanket creep and is responsible for a heavy print at the rear end.

• CHARACTERISTICS OF OFFSET BLANKETS. Robert F. Reed. *Lithographers Journal* 35, No. 1, April, 1950, Page 9. Part II of the article on blanket characteristics discusses oil absorption and "serviceability." Boiled linseed oil and a petroleum oil were used to test the absorptivity of blankets since these two oils represented most closely the two types of inks used in offset printing. It seems that blanket hardness has no relationship to absorptivity. Serviceability is the ability of a blanket to retain its original surface condition while in use. Blanket tackiness and glaze reduce printability. It was found that: 1. Phenolic and alkyd types of black ink were more harmful than linseed inks. 2. Phenolic type ink with tungstated methyl violet pigment was similar to linseed type black ink. 3. Heat-set black with no driers was almost harmless. The survey was helpful to both the lithographer and the blanket manufacturer.

MACHINE FOR PREPARING LITHOGRAPHIC OR OTHER PRINTING PLATES AS WELL AS RUBBER SHEETS USED IN OFFSET PRINTING. Johan Gunnar Lindmark. *Official Gazette* 630, No. 4, January 24, 1950. *United States Patent Number 2,495,269.* A machine for graining lithographic and other printing plates as well as rubber sheets used in the art of offset printing, comprising in combination a rotatable drum, means for rotating said drum at a high peripheral speed, means for removably securing the work on said drum, a housing for said drum, an elongated opening in said housing extending in parallel with the axis of rotation of said drum, means for sealing said elongated opening, at least one sand blast nozzle extending through said elongated opening and directed towards said drum, means for moving said nozzle along said opening while maintaining said sealing means operative and suction means communicating with said housing and adapted to maintain a sufficient sub-atmospheric pressure therein to prevent dust from emerging into the surrounding locality.

• THE ABC OF OFFSET. George Jos. Lenzer. *Printing Equipment Engineer* 79,

No. 6, March, 1950, Pages 38 & 39 (2 pages). Part II. Type for use in offset reproduction must have certain qualities. It must be clean, printed with a dull ink, on a dull-coated blue white stock. Furthermore care must be exercised to keep copy clean. Proofreading is of utmost importance. Several methods of producing type copy for offset are described, such as typewritten, fototype, transparent proofs, and by means of the recently developed Phototypesetting method.

* LITHURE' PLATES AND ELECTRONIC COLOR SCANNER MAKE BOWS. *Printing Magazine* 74, No. 4, April, 1950, Pages 46 & 47 (2 pages). A brief description of two recent developments of the Time, Inc. laboratories—the Lithure plate and the electronic color scanner. The Lithure plate is a copper plate, sensitized with a resinous emulsion which hardens to form an electrolytic resist in the image areas when exposed through a negative. With the unhardened resist removed chromium is plated on the non-image areas, after which the resist may be removed. The result is a series of copper-bottomed image "wells" somewhat like gravure. The wells are claimed to be straight-sided, giving faithful tone reproduction. The electronic color scanner produces corrected color separations from transparencies. The corrections are: (1) color, (2) black plate balance, (3) under-color removal. Normal photographic procedures frequently fail in the latter two. The device employs a scanning beam which passes thru the transparency, point by point, is split up by the three separation filters and directed to three photocells. The resulting currents pass thru electronic circuits which perform the color correction, and then operate glow lamps to expose the separation negatives.

* CHARACTERISTICS OF OFFSET BLANKETS. Robert F. Reed. *Modern Lithography* 18, No. 3, March, 1950, Pages 32-34 and 93, 95, 97, 99 (7 pages). Twenty specimens of American offset blanket materials were subjected to laboratory tests for performance and serviceability. Results of tests for stretch showed a remarkable improvement since the previous survey in 1935. Tests for hardness and resilience showed no correlation between these properties. Embossing tendency was measured by determining rates of absorption of boiled linseed oil and heat-set oil. No correlation was found between embossing tendency and hardness of the blankets. The blankets showed general improvement in their ability to remain tack and glaze-free during printing. Synthetic inks were found more harmful to blankets than linseed and heat-set inks. The order in which the blankets developed tackiness or glaze was the same for all the inks that contained driers.

* SIMPLIFIED HUMIDITY CONTROL FOR SMALLER PLANTS. William W. Ayre. *American Printer* 130, No. 4, April, 1950, Pages 45-47 (3 pages). The advantages of moisture-conditioned air are now possible in small and medium sized shops through inexpensive units. Humidity control is suggested as a method for eliminating static and as a means of controlling register. Humidifiers for small plants can be purchased for as little as $250 each. These units will take care of 20,000 to 25,000 cubic feet of air. It is claimed that 24 hours after installation the atmosphere of the interior of the plant is properly humidified.

* AIR CONDITIONING. *Modern Lithography* 18, No. 4, April, 1950, Pages 55, 57, & 95 (3 pages). This installment discusses the following factors which must be considered in the design and operation of an air-conditioning system: heating, ventilation, availability and cost of water, air cleaning, and humidification.

* ANALYSIS of COLOR CONTROL FROM A BUYER'S VIEWPOINT. E. H. Balkema. Part I *American Ink Maker* 18, No. 4, April, 1950, Pages 23-26 and 49 (5 pages). Part II *American Ink Maker* 18, No. 5, May, 1950, Pages 36-38 and 63 (4 pages). Mr. Balkema presents a detailed analysis of color control as approached by the large volume purchaser of packaging materials. His own solution, adequate till a better one appears, consists of visual selection of correct color and light and dark limits, the latter made with consideration of production difficulties. Spectrophotometric curves of these three form primary standards. Working standards, for visual checks during production must at all times check with the primary standards and are replaced when they don't. In ordering inks, the author points the need for giving the ink-maker data on production and use, as well as on the physical and color specifications desired. To a survey question on color control and specifications of blacks and whites several answers are given which show that visual comparison with standard colors, either chips or printed swatches, is the most widely used color control system although most printers consider it inadequate. Two reports cited the Photovolt Meter, Model #610, as the best control instrument. Walter Granville reported that no set of chips was adequate in the near white region, but that the Hunter Color Difference Meter was adequate and less costly than the spectrophotometer, for near whites. One reply stressed the need for specifications in all three aspects of color-hue, chroma and lightness—with just tolerable samples chosen visually from a large group of specimens.

* MOIRE PATTERNS DISCUSSED AT PRODUCTION CLUB. *American Ink Maker* 18, No. 4, April, 1950, Page 47. Dr. Toilenaar of the Institute for Graphical Technology, Amsterdam, Netherlands, reports on the Moire Interference Patterns. He tells how the patterns are formed, how to calculate the distance between Moire bands, and mentions a few unusual causes of Moire patterns which occurred in printing.

ADDITIONS TO DAMPING WATER IN OFFSET PRINTING. H. Eggen. *Graph. Markt.* 4, No. 6, 1949, Pages 58-60 (3 pages). (In German). The question has been raised as to whether additions to the damping water are necessary to prevent toning. Drying of the gum arabic layer is very important because the layer is then practically irremovable, except by mechanical action or anti-toning media. These usually also act as emulsifiers. Only gum arabic and similar media should be used. Many artificial resin varnishes are more suitable for use in offset inks than are ordinary linseed oil varnishes. *Printing Abstracts* 5, No. 4, April, 1950, Page 177.

DAMPING DEVICE FOR LITHOGRAPHIC PRINTING MACHINES. F. C. Servante and O. L. Owen. *British Patent Number 633,990.* The device consists of a bracket which can be attached to the machine frame and carries a liquid supply tank provided with a sponge mass having a lip projecting through a slot in the tank into contact with a (preferably) metal roller on the machine, which in turn transfers the moisture to the damping roller which contacts the printing plate at the correct position relative to its rotation so that the plate is damped after printing, before fresh ink is applied. The tank is adjustably mounted on the bracket so that its position relative to the metal roller can be adjusted to vary the pressure of the sponge lip on the roller to assist in controlling the supply of moisture. *Printing Abstracts* 5, No. 4, April, 1950, Pages 165-66.

* TIME - LIFE DEVELOPMENTS — ELECTRONIC SCANNER UNVEILED.

National Lithographer 57, No. 5, May, 1950, Pages 29 & 66 (2 pages). Mention is made of Time Incorporated's Electronic Scanner which electronically compensates for ink deficiencies, masking, etc. Kodachrome copy is scanned at 200 lines to the inch producing simultaneous continuous tone cyan, magenta, yellow, and black separations. Experts claim that the separations are in better balance than those made by conventional methods. A description is given of the "Lithure" plate which is prepared by plating chromium onto the non-image areas of a copper base plate. The image areas are protected by a resinous image which is applied to the plate by a photomechanical process. Mention is made of the "Spot and Spade" plater which is a pencil electrode device developed by Time for the covering of copper printing areas with a chromium plate. The plating medium is a common plating solution.

ON CURING LABELING TROUBLES. *Bottler & Packer* 24, No. 3, 1950, Page 76. A list of label defects, their probable causes and suggested remedies, is given. *Printing Abstracts* 5, No. 5, May 1950, Page 238.

• THE SHAPE OF THINGS TO COME IN LITHOGRAPHY. Herbert Paschel. *Lithographers Journal* 35, No. 3, June 1950, Pages 8, 9 & 45 (3 pages). There have been many technological advances in the printing industry which are of great importance to the worker. The use of the 3-point registration bar in process photography has simplified registration of separation negatives and made masking easier. Masking techniques are becoming more and more popular. Color separation by electronics produces color corrected negatives automatically. Many types of plates have been introduced ranging from plastic plates for improved quality in short and intermediate runs to the poly-metallic plates for long runs. Xerography has been developed and improved to the point where it has commercial possibilities. Technological progress will create new skills and require new knowledge of the process and the worker will be expected to adjust himself accordingly.

• SOME ELEMENTS OF COPY PREPARATION. Ray M. Hogan. *Modern Lithography* 18, No. 6, June 1950, Pages 33-34, 105 & 107 (4 pages). In an effort to economize on time, labor and money it is recommended that some attention be paid to the preparation of copy for offset reproduction. An outline of the steps used in copy preparation for simple color work is to make a key-line drawing and superimpose photoprints of the other colors in the job. Areas that are solid color or will have a halftone insert are blocked-out with opaque ink or paper. Each color, other than the key-line drawing, has its own transparent sheet so that when the copy is assembled it contains all the parts of the drawing exclusive of any halftones. All these color sheets are accurately registered with the key-line drawing. To indicate irregularly shaped block or halftone areas on the various drawings, opaque patches are made from a print of the half-tone. These are pasted into position on their proper sheet. On jobs that require only simple color separation it is possible to dispense with the art reproduction copy and make negatives for each color. All extraneous matter is opaqued on each negative and plates are made from them. These basic principles will help sales or contact men in explaining copy preparation to a customer.

• A DISCUSSION OF HALFTONE REPRODUCTION IN OFFSET. Charles Wood. *Western Printer and Lithographer* 6, No. 1, April, 1950, Pages 23 & 24 (2 pages). Density and contrast are the most important quality factors in halftones (others are smoothness, sharp-

ness, detail and fidelity) and must be controlled to overcome the limitations of printing. The greatest limitation is reduction of contrast, from 2.0 or 3.0 on the photograph to 1.3 on the press print for coated stock and only 0.9 for uncoated papers. Soft uncoated stocks, by requiring a heavy ink lay for good solids tend to fill in and flatten the shadows; the thinner ink lay sufficient for good solids on hard coated paper tends to flatten the hilights. The halftone should compensate for this. The author points the advisability of standard methods for shooting quality halftones, and suggests two, both involving etching.

Lithographic research

* RESEARCH ROUNDUPS. Anon. *Modern Lithography* 18, Number 1, January, 1950, Pages 41, 43, 45 (3 pages). At a two-day meeting of the research committee of the Lithographic Technical Foundation demonstrations and reports covering the status of the research projects on the Sensitivity of Bichromated Coatings, Color, Control in printing, Improved Desensitization, Surface treatments, Litho Properties of Metals, new Photo-sensitive Materials, Control of tone Reproduction, and Offset Blanket Studies were given. Reports were also given on publications during 1949 and on the Technical Forums which were given in Fort Worth, Chicago, and Cincinnati. The article includes a list of the members present at the meeting.

Technical processes

* 4-COLOR DRY OFFSET PRESS. *American Pressman* 59, No. 8, July, 1949, pp. 44-5 (2 pages). A new 4-color dry offset press, designed by N. E. Funk, is being introduced by Hires, Castner & Harris, Inc., of Philadelphia. The press uses high etch relief magnesium printing plates. The plates are sensitized with cold-top enamel, exposed, developed, powdered, and then etched with nitric acid. Three to four "bites" are required to etch the non-image areas to a depth of about .015". The press takes rolls of paper up to 41" wide, and the roll is cut into sheets 23-38" long.

* WAYS TO CHECK COLOR VARIATION. Louis D. Pollner and Michael H. Bruno. *American Printer* 128, No. 8, August, 1949, pp. 43–44 (2 pages). Color measuring instruments operate on either of two principles: physical or psychological. A physical instrument measures the color of an ink sample by how much it reflects each wave length of light. Psychological instruments are manufactured to measure color in either of two ways—the first method measures a color by giving the percentage of red, blue and green that appears to be in it. The second psychological system describes a color by three characteristics called hue, lightness and saturation. LTF research indicates that two instruments may be needed to do a real control job. One would be necessary to match inks and to OK proofs with the customer's copy. Such comparisons can be made with either a physical or psychological instrument. After the job is on the press the main factor that seems to affect color is the thickness of ink lay. This can be detected by a densitometer or a reflection meter. However, even with these two instruments, the craftsman's skill is still needed to correct any errors they detect.

* COLOR CONTROL IN PRODUCTION. *American Pressman* 59, No. 10, September, 1949, pp. 36-7. The recording spectrophotometer is a precision instrument for measuring and recording

graphically the spectral reflectance of a colored sample. The spectrophotometer specification of a standard color is superior to a sample of that color because the latter is subject to change with time. The philosophy of spectrophotometric specifications, and working standards which are in agreement with them is expounded in this article.

THE GAS ARC — A NEW LIGHT SOURCE. J. N. Aldington. *Illuminating Engineers Society*, London, 1949, 14 (2), 19-38; discussion 39-51 (D769.3/4918). The term "Gas Arc" has been applied to a recently developed range of xenon-filled discharge tubes operated under conditions which cause them to emit radiation of sunlight quality. The radiation from the Gas Arc is characterized by an intense continum extending from the ultra-violet through the visible region into the infra red. An introductory section is followed by some considerations of the factors which influenced the development of this new source. The luminous and other characteristics of the Gas Arc in its present form are given, and it is shown that a 5-kw. xenon-filled lamp has an initial efficiency of 25-30 l.w. The simple circuit arrangement necessary for the ignition and operation of Gas Arc lamps is described. The concluding sections deal with some of the latest developments in this field and with an examination of possible applications. Printing Abstract 4, No. 6, June, 1949, p. 258.

COLOR - MATCHING. *Light and Lighting* 42, May, 1949, Pages 122-24 (3 pages). The Siemens Industrial Color-Matching Unit, which is described, provides an illuminant for matching colored products under conditions simulating natural daylight. The Unit employs two 2-ft., 40-watt blue fluorescent Sieray lamps and two 60-watt pearl single-coil gas-filled tungsten-filament lamps. The illumination from these lamps is blended and diffused within the Unit to give a spectral quality approximately equal to that of natural daylight at a color temperature of 6500° K. The lamps produce about 3000 lumens, which permits samples to be examined under intensities of 20 to 50 lumens per square foot. The Unit is operated by a 3-way switch block, which contains a separate switch for the fluorescent lamps. The rated life of the tungsten lamp is 1000 hours, and that of the fluorescent lamps is longer. *Monthly Abstract Bulletin* 35, No. 12, December, 1949, Page 496.

POISONOUS POWDER IN FLUORESCENT LAMPS. *Camera (Baltimore)* 71; 32, May, 1949. The fluorescent powder used in fluorescent lamps contains a small percentage of beryllium and is very toxic. Cuts acquired in handling broken lamps may fail to heal for very long periods and require surgery. If the powdered material from the surface of the glass is inhaled, lung tumors may result. Power companies and lighting engineers have devised a machine for breaking tubes under carefully controlled conditions. No advice is as yet available to consumers regarding a safe way to dispose of fluorescent tubes, but it is suggested that no glass or material from the lamps be picked up with the fingers, and that, after breakage of a lamp, dust be allowed to settle before the room is entered. Lamp manufacturers are now experimenting with synthetic, nonmetallic powders to replace beryllium. Monthly Abstract Bulletin 35, No. 6, June, 1949, p. 253.

* PROCESS AND APPARATUS FOR ELECTRONOGRAPHIC PRINTING. *Official Gazette*, 627, No. 1, October, 1949, p. 120. United States Patent No. 2,483,462 (May 3, 1945). The method of reproducing upon print receiving material, an image carried by a printing member of a printing couple and which comprises inking said image, impressing upon the ink on the image an electrical

precharge, impressing an electrical precharge on the print receiving material, introducing said precharged print receiving material to the printing zone, and creating an electric field of force at the printing zone to transfer the precharged ink from the inked image to the precharged print receiving material.

* STATIC DISCHARGE INDICATING DEVICE. Emery Meschter. *Printing Equipment Engineer* 78, No. 6, September, 1949, p. 46. United States Patent No. 2,475,356 (July 22, 1948). The device facilitates the discharge of static electricity from moving sheets, webs, and films, such as paper and cloth. It provides a positive indication of the discharge of electricity. The indication depends only on the magnitude of the discharge and not on the polarity of the charges on the moving sheet. There are no mechanical moving parts and accumulator and a thermionic vacuum tube are used.

* DEVELOPMENT OF METHODS FOR PRINTING ON PLASTICS. Eugene St. John. *Inland Printer* 123, No. 6, September, 1949, p. 65. Old time and modern methods of printing on plastics are mentioned in this article. Also discussed are the two kinds of rotogravure equipment: the unit type, which is used in general, and the textile printing machine. The silk screen process, Letterpress method, Offset Lith and the Aniline process are all discussed in detail.

* MEASUREMENT AND CONTROL OF COLOR. Louis D. Pollner and Michael H. Bruno. *Modern Lithographer*, 17, No. 9, September, 1949, pp. 42-43. A simplified description of four color measuring devices, the G. E. Recording Spectrophotometer, the PPS-IDL Color Eye, the Hunter Color Difference Meter and the Photovolt Reflection Meter. The article points up the distinction between the first, which gives a purely physical description of the light reflected by the color under question; the second and third, which measure the observer's impression of the color; and the fourth, which can be used primarily for checking ink flow on the press. Mention is made of the LTF survey of color variations in Lithographic printing.

* BRITISH STANDARDS. Anon. *British Journal of Photography*. XCVI, No. 4669, November, 1949. (11th of Nov.) Five years of research have now produced a "British Standard" set of four-color and three-color letterpress inks—to supersede a "Trade" Standard which has been in use since 1929. The British Standard lays down the characteristics with regards to hue, color, strength, and light-fastness which must be met.

* HOW COLOR COMBINATIONS AFFECT LEGIBILITY. Albert W. Gray. *American Printer* 129, No. 5, November, 1949, pp. 36-37. The legibility of printing involves two factors, color and brightness, and each play an almost identical role. A rule evolved at the University of Minnesota in relation of legibility to color is the "greater the brightness difference between symbol and background, the greater the legibility of the print." The article lists the rating of "color combinations and their visual effects."

THE FUNDAMENTALS OF THE PRINTING AND DUPLICATING PROCESSES. Published by the Howard Smith Paper Mills Ltd., Toronto, Canada. This is an elementary but broad exposition of the fundamentals of printing processes and allied arts, written primarily for the layman and semi-technical personnel. The subjects covered include: (1) Letterpress printing (typesetting machines, presses), (2) Printing Inks, (3) Lithographic and Offset process, (4) Intaglio printing, (5) Stencil printing, (6) Photo-engravings (color

separation work, etc.), (7) Bindery operations (cutting, gumming, binding), (8) Typography (type faces), (9) Ordering of production and production check list. (Book).

* THE FUNDAMENTALS OF ADHESION. *Paper Trade Journal* 129, No. 26, December 29, 1949, Pages 29-33 (5 pages). Different types of bonding forces, such as those due to permanent dipoles, induced dipoles, and dispersion forces are described. The article is general in nature and no examples are given of specific adhesive for a specific adherend. In particular, there is no information given which would enable one to pick material which would adhere strongly to a metal surface. The effect of surface smoothness or porosity, and adsorbed liquids or gases, on the adhesion of materials, is discussed.

* METHOD FOR PRINTING ON THERMOPLASTIC SHEETLIKE MATERIAL. Marc. A. Chavannes. *United States Patent Number 2,486,259. Official Gazette* 627, No. 4, October, 1949, P. 1191. A method for decorating sheetlike resinous material comprising the steps of printing on said material with an ink, said ink comprising resin having a lower molecular weight and lower softening temperature than the resin of said material, and a liquid vehicle which will not attack said material, drying said ink, and heating said material to a temperature sufficiently high to render said ink tacky and to bond said ink to said material.

ALLYL STARCH—A NEW MATERIAL. HIGHLY COMPATIBLE RESIN THAT GIVES NEW BRILLIANCE AND PERFORMANCE TO INKS, COATINGS AND FINISHES, IS NOW AVAILABLE FOR PACKAGE TESTING. M. H. Baker. *Modern Packaging*, 1949, 22 (9) 131-3 (May). Allyl starch is a cream-coloured solid which is readily soluble in alcohols, ketones, esters, halogenated hydrocarbons, nitro-paraffins, high-flash napthas, ethers and in aromatic hydrocarbons to which some hydrogen bond-forming solvent, such as isobutanol, has been added. Because of its solubilities and because it is compatible with many other resins, this new material has been evaluated by many industrial organizations. Industrial users in the packaging field have found that allyl starch brings up the colours in lithographed impressions on paper or metal, sharpening and brightening the effect. Allyl starch films dry very quickly, and when cured, form a hard, mar-resistant surface that has a high gloss is extremely solvent resistant and resistant to acids and water. Because of these properties, allyl starch is now considered for use in various coatings such as overprint varnish on beer cans, coating on cap liners that are used on bottles containing acidic or solvent-bearing materials, and as a protective gloss coat for soft-drink bottle crowns. *Printing Abstract* 4, No. 8, August, 1949, P. 381.

PRINTING PRESSURES AND CYLINDER COVERINGS. R. G. W. Croney. *Patra Journal* 12, Number 2, Pages 6-9, July, 1949. (4 pages). An illustrated description is given of apparatus designed to measure the actual pressure generated at the instant of printing impression in a flat-bed cylinder machine. By its use PATRA is studying the nature of the deformation of cylinder materials of different kinds, the means by which printing pressure is distributed on type of various sizes and kinds and on halftones of varying density, and the printing factors which control the fidelity of type and halftone reproduction. It will also be useful for making experimental prints under controlled and known pressures. In addition, studies are being made of the deformation of cylinder coverings by means of another unit, which is also described. 2 illustrations. *Bulletin*

of The Institute of Paper Chemistry. 20, Number 4, December, 1949, Page 263.

* COLOR PRINTING CONTROL. Anon. *American Pressmen* 60, Number 2, January, 1950, Pages 28 and 36 (2 pages). The Photovolt Reflection Meter is a rugged, single photo-electric instrument, suitable for measuring color and controlling color on the press. It consists essentially of a light source, photocell and galvanometer. The advantages it affords in the control of color are pointed out by citing the inadequacies of visual control. In use, the instrument is adjusted to read 50 for the desired color, in which case it will read above 50 for a lighter color and below 50 for one that is darker. Experience dictates the tolerance, in meter units, allowable on each job, as well as the corrections to be made for changes during drying. The instrument can also be used for specifying color by standardizing it against standard placques.

COLOR - MATCHING. *Light and Lighting* 42, May, 1949, Pages 122-24 (3 pages). The Siemens Industrial Color-Matching Unit, which is described, provides an illuminant for matching colored products under conditions simulating natural daylight. The Unit employs two 2-ft., 40-watt blue fluorescent Sieray lamps and two 60-watt pearl single-coil gas-filled tungsten-filament lamps. The illumination from these lamps is blended and diffused within the Unit to give a spectral quality approximately equal to that of natural daylight at a color temperature of 6500° K. The lamps produce about 3000 lumens, which permits samples to be examined under intensities of 20 to 50 lumens per square foot. The Unit is operated by a 3-way switch block, which contains a separate switch for the fluorescent lamps. The rated life of the tungsten lamp is 1000 hours, and that of the fluorescent lamps is longer. *Monthly Abstract Bulletin* 35, No. 12, December, 1949, Page 496.

* ANTI-OFFSET SPRAY ON PRINTING PRESSES AT ELI LILLY CO.'S INDIANAPOLIS PLANT. H. Guy Bradley. *Printing Equipment Engineer* 79, No. 6, March, 1950, Pages 26 & 27 (2 pages). A modified arrangement of dry spray equipment which continues to eliminate more of the offset bugaboos is described. In the new equipment the powder quantity and the air pressure have both been reduced at least 50%. After running a sheet twice through a two-color press it is difficult to detect that it has been sprayed. This is a great aid to processing sheets which are to be varnished. The technical modifications of the device are covered briefly with diagrammatic representations.

* EXTREME-SENSITIVITY COLOR COMPARATOR. *Instruments* 23, No. 3, March, 1950, Pages 250 & 252 (2 pages). New "Color-Eye" color-matching instrument is five times more sensitive than the human eye, over a range of brightness of 10,000 to 1. The Color-Eye is equipped to measure tristimulus values relative to white on a percentage scale, and will take samples from ½ inch.

* PRINTING. *Fortune*, 11, No. 4, October, 1949, pp. 101-106. Brief illustrated descriptions are given of the three major printing processes; Letterpress, Offset and Gravure, with the particular advantages of each process. The new developments described are phototypesetting machines, electronic scanning machines for producing halftone engravings and color-separation negatives, multi-color web offset presses, and bimetallic offset plates.

• PHOTOENGRAVING IN 1949. H. M. Cartwright. *Photographic Journal* 90A, 1950, Pages 134-35 (2 pages). This is a survey of the graphic arts progress during the past year. The article covers briefly several fields; process photography (masking technique), lighting and densitometry, line and halftone reproduction, type composition, photogravure, photo-lithography, color reproduction, miscellaneous developments, and the silk screen process. A bibliography is included in the article.

• SIMPLIFIED HUMIDITY CONTROL FOR SMALLER PLANTS. William W. Ayre. *American Printer* 130, No. 4, April, 1950, Pages 45-47 (3 pages). The advantages of moisture-conditioned air are now possible in small and medium sized shops through inexpensive units. Humidity control is suggested as a method for eliminating static and as a means of controlling register. Humidifiers for small plants can be purchased for as little as $250 each. These units will take care of 20,000 to 25,000 cubic feet of air. It is claimed that 24 hours after installation the atmosphere of the interior of the plant is properly humidified.

• ANALYSIS of COLOR CONTROL FROM A BUYER'S VIEWPOINT. E. H. Balkema. Part I *American Ink Maker* 18, No. 4, April, 1950, Pages 23-26 and 49 (5 pages). Part II *American Ink Maker* 18, No. 5, May, 1950, Pages 36-38 and 63 (4 pages). Mr. Balkema presents a detailed analysis of color control as approached by the large volume purchaser of packaging materials. His own solution, adequate till a better one appears, consists of visual selection of correct color and light and dark limits, the latter made with consideration of production difficulties. Spectrophotometric curves of these three form primary standards. Working standards, for visual checks during production must at all times check with the primary standards and are replaced when they don't. In ordering inks, the author points the need for giving the ink-maker data on production and use, as well as on the physical and color specifications desired. To a survey question on color control and specifications of blacks and whites several answers are given which show that visual comparison with standard colors, either chips or printed swatches, is the most widely used color control system although most printers consider it inadequate. Two reports cited the Photovolt Meter, Model #610, as the best control instrument. Walter Granville reported that no set of chips was adequate in the near white region, but that the Hunter Color Difference Meter was adequate and less costly than the spectrophotometer, for near whites. One reply stressed the need for specifications in all three aspects of color-hue, chroma and lightness—with just tolerable samples chosen visually from a large group of specimens.

• MOIRE PATTERNS DISCUSSED AT PRODUCTION CLUB. *American Ink Maker* 18, No. 4, April, 1950, Page 47. Dr. Toilenaar of the Institute for Graphical Technology, Amsterdam, Netherlands, reports on the Moire Interference Patterns. He tells how the patterns are formed, how to calculate the distance between Moire bands, and mentions a few unusual causes of Moire patterns which occurred in printing.

CONFORMITY OF RUBBER AND SIMILAR MATERIALS. J. Bekk. *Druckgewerbe* 3, 1950, Pages 28-30 (3 pages). The ability of rubber to conform to rigid surfaces when pressed against them plays an important part in printing techniques. The use of rubber for printing forms, printing blankets, intaglio presses and printing rollers de-

pends on this conformability. An apparatus for testing the conformability is described. It was found that the conformability increased up to a critical thickness, after which it dropped quite rapidly. Perbunan, Neoprene, and GR-S showed similar behaviour. *Printing Abstracts* 5, No. 4, April, 1950, Page 187.

* THE FIRST RESULTS OF RESEARCH. C. M. Flint. *American Newspaper Publishers Assn.*, No. 6, May 1950, Pages 189-216 (28 pages). There are indications that a separation of the influences of surface roughness from other influences when laying down a film of ink may be possible. It may also become possible to measure both smoothness and absorption characteristics of a sheet of paper under normal printing pressures. A newly developed resist has permitted the production of relief offset plates, bringing relief offset closer to practical use. In addition new developments in other fields of interest to newspaper publishers are reported.

MACHINERY — PRINTING PRESS. Fred T. Blakemore. *American Paper Converter* 24, No. 3, March, 1950, Pages 18-19 (2 pages). A Rotary, high-speed web printing press, introduced by Crawford, Inc., Providence, R. I., can be converted from gravure-offset printing to letterpress in 20 minutes by replacing the gravure cylinder with a "celmeter" roller and the offset roller with one which carries rubber plates. Makeready is not necessary in either type of printing, and any basic form of ink may be used. The physical and performance characteristics of this Crawford Dual Purpose Press, Model 31-600, are discussed. 1 illustration. *Bulletin of the Institute of Paper Chemistry* 20, No. 8, April, 1950, Page 571.

Air conditioning

* AIR CONDITIONING. Part Four. *Modern Lithography* 18, No. 2, February, 1950, Pages 47, 49 (2 pages). This is the fourth of a series of articles based on the Lithographic Technical Foundation book, "What the Lithographer Should Know About Air Conditioning." It defines relative humidity and describes the wet-and-dry-bulb hygrometer used to measure it. The effect of relative humidity on the moisture content of hygroscopic materials is discussed.

* AIR CONDITIONER. *Modern Lithography* 17, No. 9, September, 1949, pp. 26-29, 85, 87, 89 (7 pages). This article is based on material appearing in the forthcoming LTF publication on "What the Lithographer Should Know About Air Conditioning." In designing a system for a particular plant not only should the optimum temperature and relative humidity levels for each department be considered but the investment and maintenance costs for a determined short or long period should be weighed against the technical advantages and disadvantages of necessary compromises. The value of air conditioning in each department and the probable heat and moisture load and the temperature and relative humidity requirements for each are discussed.

* AIR CONDITIONING. Parts II and III. (Anon.) *Modern Lithography* 17, Number 11, November 1949, Pages 55 and 88 (2 pages). *Modern Lithography* 18, Number 1, January, 1950, Pages 33, 34, 87 and 89 (4 pages). The survey constructed by the air conditioning engineer will include climatic conditions and conditions of plant and processes, to establish the "design day." Equipment and capacity will depend on costs of power and water and on the amounts and distribution of gains and losses of heat and humidity. Specifications for air conditioning equipment are based on the survey and designed to fit Lithographic requirements. A brief discussion is included covering nature of the atmosphere, and meaning of temperature, humidity and dew point.

• AIR CONDITIONING. Anon. *Modern Lithography* 17, No. 11, November, 1949. Part I and II. A discussion of the problems to be considered in the planning of air conditioning equipment for a lithographic plant. The weather for the extreme days is disregarded since planning for the latter may involve costly installations. The availability and cost of water, heat, and power must be considered. The various sections of the plant and their respective air conditioning problems are important. The heat and moisture changes of equipment and personnel within the building must be taken into account. A table is given for the maximum amount of moisture given off by the various sizes of lithograph presses.

SKILLED CRAFT TEXTS

501 Lithographic Offset Press Troubles
502 Offset Platemaking (albumin)
503 Offset Photography—(Line)
504 Offset Platemaking (Deep Etch Gum Process)
505,6 Lithographic Offset Press Operating, 2 Volumes
507 Offset Stripping (Black and White)
508 Offset Photography (Halftone)
509 Offset Photography (Color Separation)
510 Tone and Color Correcting (Dot Etching)
511 Tone and Color Correcting (Hand Retouching)
513 Lithographic Press Technical
514 Tone and Color Correcting (Opaquing)

SHOP MANUALS

101 Paper and Humidity in the Pressroom
102 Dot Etching for Offset Lithography
103 Albumin Platemaking
104 pH Control of Fountain Solutions
105 Inking System for the Offset Press
106 Lithographic Offset Press Blankets
107 Feeder and Delivery for Offset Presses
108 The Dampening System of Offset Press
109 Guides, Grippers and Insertion Devices
111 Offset Plates in the Pressroom
112 Offset Photography (Line)
114 Packing and Pressures for Presses
115 Press Cylinders for Offset Lithography
116 Offset Photography (Color Separation)
117 Hand Transfers for Offset Lithography
118 Press Troubles for Offset Lithography
119 Gauges and Instruments for Offset
120 Photo-Composing for Offset Lithography
121 Tone and Color Correcting (Retouching)
122 Proving for Offset Lithography
123 Platemaking for Offset (Deep Etch)

Publications

124 Offset Photography (Halftone)
125 Paper for Offset Lithography
126 Paper Conditioning for Offset Lithography
127 Pressroom Problems
131 Plate Troubles in Offset Lithography
133 Paper Troubles in Offset Lithography

SPECIAL SUBJECT TEXTS

403,4 Chemistry for Lithographers, 2 Volumes
407 Survey of Lithography
410 Estimating (Black and White)
411 Estimating (Color)
413 Leadership Training

RESEARCH AND TECHNICAL PUBLICATIONS

204 The Light Fastness of Lithographic Ink Pigments
206 The Albumin Process of Photolithography
210 Deep-Etched Lithographic Plates Directly from Negatives
211 Dot-Etching on Dry Plates and Films
212 Litho-Kleen, Improved Treatment for Blankets and Rollers
214 Improvements in Deep-Etch Platemaking
215 Sensitivity Guide
301 Modern Paper Conditioning Methods and Paper Hygroscope
303 Method of Conditioning Paper for Multi-Color Offset
304 Optical Density as a Measure of Tone Value in Lithography
305 Dot Area, Dot Density, and Tone Value
306 Prevention of Occupational Dermatitis (Chrome Poisoning)
307 Curling of Lithographic Papers
308 What the Lithographer Should Know About Paper
309 Air Conditioning for Lithographers
647,8,9 Lithographic Abstracts (Annually from 1947)
701 The Control of Tone Reproduction in Lithography
702 Reproduction of Tones by Offset Lithography
801 How To Make and Run Better Plates
802 Plate Surface Treatments
904 The Register Rule
SB1 The Paper Hygroscope

SKILLED CRAFT TEXTS

501 Lithographic Offset Press Troubles
502 Offset Platemaking (albumin)
503 Offset Photography—(Line)
504 Offset Platemaking (Deep Etch Gum Process)
505,6 Lithographic Offset Press Operating, 2 Volumes
507 Offset Stripping (Black and White)
508 Offset Photography (Halftone)
509 Offset Photography (Color Separation)
510 Tone and Color Correcting (Dot Etching)
511 Tone and Color Correcting (Hand Retouching)
513 Lithographic Press Technical
514 Tone and Color Correcting (Opaquing)

SHOP MANUALS

101 Paper and Humidity in the Pressroom
102 Dot Etching for Offset Lithography
103 Albumin Platemaking
104 pH Control of Fountain Solutions
105 Inking System for the Offset Press
106 Lithographic Offset Press Blankets
107 Feeder and Delivery for Offset Presses
108 The Dampening System of Offset Press
109 Guides, Grippers and Insertion Devices
111 Offset Plates in the Pressroom
112 Offset Photography (Line)
114 Packing and Pressures for Presses
115 Press Cylinders for Offset Lithography
116 Offset Photography (Color Separation)
117 Hand Transfers for Offset Lithography
118 Press Troubles for Offset Lithography
119 Gauges and Instruments for Offset
120 Photo-Composing for Offset Lithography
121 Tone and Color Correcting (Retouching)
122 Proving for Offset Lithography
123 Platemaking for Offset (Deep Etch)

124 Offset Photography (Halftone)
125 Paper for Offset Lithography
126 Paper Conditioning for Offset Lithography
127 Pressroom Problems
131 Plate Troubles in Offset Lithography
133 Paper Troubles in Offset Lithography

SPECIAL SUBJECT TEXTS

403,4 Chemistry for Lithographers, 2 Volumes
407 Survey of Lithography
410 Estimating (Black and White)
411 Estimating (Color)
413 Leadership Training

RESEARCH AND TECHNICAL PUBLICATIONS

204 The Light Fastness of Lithographic Ink Pigments
206 The Albumin Process of Photolithography
210 Deep-Etched Lithographic Plates Directly from Negatives
211 Dot-Etching on Dry Plates and Films
212 Litho-Kleen, Improved Treatment for Blankets and Rollers
214 Improvements in Deep-Etch Platemaking
215 Sensitivity Guide
301 Modern Paper Conditioning Methods and Paper Hygroscope
303 Method of Conditioning Paper for Multi-Color Offset
304 Optical Density as a Measure of Tone Value in Lithography
305 Dot Area, Dot Density, and Tone Value
306 Prevention of Occupational Dermatitis (Chrome Poisoning)
307 Curling of Lithographic Papers
308 What the Lithographer Should Know About Paper
309 Air Conditioning for Lithographers
647,8,9 Lithographic Abstracts (Annually from 1947)
701 The Control of Tone Reproduction in Lithography
702 Reproduction of Tones by Offset Lithography
801 How To Make and Run Better Plates
802 Plate Surface Treatments
904 The Register Rule
S81 The Paper Hygroscope